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The New England
Journal of Medicine

VOLUME 204 APRIL 30, 1931 NUMBER 18

NEW ENGLAND BRANCH AMERICAN UROLOGICAL ASSOCIATION

TWO RECENT CASES OF TORSION OF THE SPERMATIC CORD WITH STRANGULATION OF THE TESTIS*

BY HAROLD A. JOHNSON, M.D.†

IN the consideration of these cases attention will be directed to the personal experiences of the author, rather than to a review of the literature which is voluminous, out of all proportion to the amount of material upon which it is based. This report is of two recent cases, also a brief review of four others previously reported, the largest number which has been reported as being in the personal experience of any single surgeon, and therefore, perhaps certain conclusions arrived at by him may be given more weight than those which are based upon the report of a single case and the opinions previously given by others. There are six of these cases, the first in 1910 and the last in 1930, all of which have been operated upon, and in 4 the operation has taken place at such a short interval after the onset of symptoms that the testicle has been saved. It will be noted in the first case, which occurred in 1910, that a faulty diagnosis was made, which puts me in mind of an aphorism of a famous surgeon under whose guidance it was my good fortune to serve my surgical apprenticeship. This was that the so-called acuteness of the diagnostic ability, supposed to be possessed by certain gifted individuals, consisted in reality in most cases of having seen similar illnesses before. This was certainly so as regards Case 1 when, never having seen torsion of the cord, the diagnosis of acute epididymitis was made, and the error only discovered at operation. As a result of this experience, I delved into the literature on the subject, and my interest in it has been revived with the arrival of each fresh report. I have seen nothing new in these articles for twenty years. For those who desire to read an excellent summary of previous opinions expressed as to the etiology of torsion, I would refer them to Kretschmer's excellent paper in the *Journal of the American Urological Association* for July, 1930. This is the most recent of the contributions on this subject and covers the ground thoroughly enough. Later I shall have something to say concerning my own ideas.

Once in 1926 and once in 1928 I had occasion to report before this society some cases of torsion of the cord with strangulation of the testis. It has been my somewhat unusual experience to have seen since our last meeting two more which occurred within one week of each other. Brief abstracts of these are as follows:

1. A truck driver of 28, married, with no history or sign of venereal disease; family and past histories unimportant. He has always been well and strong and able to pursue his occupation as a truck driver without interruption. He is a young strong man, evidently in excellent condition. His present illness began with a sudden pain in the right testicle when he was jumping off his truck. He was not conscious of any blow having been received but the pain was quite acute. This occurred at 7:20 P. M. August 29, 1930. He was seen by Dr. J. W. Trask at 8:15, and given a little codein for the pain which steadily grew worse. Patient admitted to the hospital. I saw him and confirmed Dr. Trask's diagnosis. The patient was, as is usual in these cases, suffering from extreme pain characterized by sweating, increased rapidity of pulse, slight elevation of temperature, and vomiting. I have seen six proved cases of torsion and these symptoms have been present in every instance.

The testicle appeared to be somewhat swollen, the epididymis was hard and very tender. Immediate operation was recommended, and was performed at 11:45 P. M. The tunica vaginalis was exposed, this was opened and not more than a dram of serous fluid was evacuated. Incision was extended and the testicle and its cord exposed. The testicle was lying transversely, there was apparently no attachment of the epididymis to the posterior scrotal wall, the cord was twisted one and one half times from within outward. I will say in passing that this is the only case of the six in which rotation occurred in this direction; all the others had their rotation from without inward. The upper pole of the testicle was bluish, also the epididymis and that portion of the cord below the twisted portion. The torsion was corrected and the parts allowed to rest for a few moments in the corrected position and the color of the epididymis and distal portion of the cord gradually returned to normal. The parietal tunica vaginalis was then dissected away and the testicle anchored to the median septum by No. 0 chromic catgut suture placed at the upper and lower poles of the testis. The wound was closed in two layers with running sutures of No. 0 chromic catgut and sealed with collodion dressing.

There is nothing of note in the subsequent history

*Read before the New England Branch of the American Urological Association, November 20, 1930.

†Johnson—Urologist, Lynn Hospital. For record and address of author see "This Week's Issue", page 942.

of this case. The patient left the hospital at the end of the third day feeling well, and he has had no symptoms since.

2. The second case is almost identical. This man is 27 years old, with an unimportant family history, who was always well and strong and never missed a day's work up to the present. No history or evidence of venereal disease. Patient was referred by Dr. E. Newman, seen in my office on the morning of September 13 at 8:30 A. M. His illness began the night before when, while lifting a heavy piece of machinery to a shelf above his head, he was seized suddenly with a severe attack of pain in the left testicle. He went home and to bed. The pain kept him awake was not relieved by the application of heat or cold. The following day the pain continued, there was nausea and vomiting. The diagnosis of torsion of the cord was made by Dr. Newman and confirmed by me.

In my office when he was examined, there was only moderate swelling of the testicle to be detected but it seemed to me that there was a narrowing of the cord on palpation just above the testicle. Pressure gave intense pain. He had the same operation—incision on the anterior aspect of the left scrotum. Upon opening the tunica vaginalis there was an excess of fluid, probably about 3 drams. The testicle was only slightly bluish and the epididymis congested and hard. There was at this time only a half turn in the cord. The rotation of the testis had taken place from without inward in an oblique direction so that the tail of the epididymis presented at the place normally occupied by the head. On correcting the position of the testis, normal color returned to the testis and epididymis, the wall of the tunica vaginalis was dissected away and the testis sutured as usual to the median septum. His recovery was also uneventful.

In 1924 a series of these cases was reported at Atlantic City collected by our guest of tonight, Dr. Edward Keyes. The last publication was that of Kretschmer who gave an excellent résumé of this condition in the *Journal of the Urological Society* for July 1930.

In these six cases (four of which have previously been reported), the ages ranged from 17 to 28. Three of them occurred during sleep, one after coitus, another after violent muscular effort —jumping off a truck, and the last after lifting a heavy piece of machinery above his head. The first was seen in 1910, the second in 1920, the third in 1926, the fourth in 1928 and the last two were seen this year.

The first was 17 years old, the diagnosis was not made. He was operated on more than two days after the onset of his symptoms, a gangrenous testicle was found and removed. In all of the other cases the diagnosis was made and where advice was followed and the testicle promptly operated upon, preservation of the testicle resulted in every instance. One refused operation until 48 hours after the onset of his symptoms. I will say that he refused for the reason that he had had yearly attacks for five years—major attacks with vomiting and nausea and finally the symptoms subsided. This time they did not and he lost the organ. The case that was seen in 1920 was interesting because a few weeks previously he had had a similar attack in the right testicle. When I saw him his right testicle was twice the size of the left, in which the symptoms were occurring. The left testicle was operated on within six hours of the attack and a perfect result was obtained. The right testicle was unmolested. At first it was twice its normal size but at the end of six months atrophy had taken place so that it was only the size of a peanut and has remained that size ever since.

There are two conditions which may take place following strangulation. Either the testicle may go on to gangrene necessitating enucleation of the testis, or at first there is great congestion but still enough circulation to prevent gangrene. This is followed by atrophy.

I suppose a great many of you have seen atrophied testicles where there has been a history of acute pain without any history of venereal disease. In my opinion many of these are due to torsion where the circulation had not been completely cut off.

Another case which has to do with rotation of the cord occurred in 1928 in which manual reduction was performed with instant relief of his pain and the operation done some weeks afterwards.

I have followed the literature of this condition for a good many years because it seemed that I had had an unduly large experience. I can agree with Dr. Kretschmer that a great many of these cases are undiagnosed.

Now as to the etiology. It is inconceivable to me that the normal testicle can be rotated. The firm attachment of the epididymis to the posterior scrotal wall would prevent it. There must be mobility with slight or no attachment of the epididymis with possibly considerable intravaginal lengthening of the cord. Given these conditions, rotation may take place at any time. It is quite probable that the involuntary contractions of the cremaster muscle play an important part in this process.

PATENT URACHUS. REPORT OF A CASE*

BY FLETCHER H. COLBY, M.D.†

ABNORMALITIES due to faulty development play an important rôle in lesions of the urinary tract. Such conditions as reduplication of the renal pelves and ureters, congenital malposition of the kidneys or anomalies of their blood supply are of common occurrence. Less frequently encountered, however, are disturbances attributable to a patent urachus.

Certain facts relating to the development of the urachus are worth reviewing. In the embryo the allantois arises as an extension from

*From the Urological Service of the Massachusetts General Hospital.

Read before the New England Branch of the American Urological Association, November 20, 1930.

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the primitive hind gut and the union of the allantois with the embryonic intestine forms the cloaca. From the ventral portion of the cloaca the bladder is developed, with the allantois prolonged at its upper end and continuous with the bladder. The intra-abdominal portion of the allantois, extending from the ventral part of the bladder to the umbilicus, has long been called the urachus[1]. Upon this point, however, there is a difference of opinion. Begg[2], in a recent study of the origin of the urachus, contends that the allantois takes no share in the development of the bladder, which is partly cloacal and partly wolffian in origin. He believes that the urachus is the modified—*not obliterated*—upper end of the foetal bladder. The only remainder of the allantois in the full term foetus is the central of three fibrous bands attached to the upper end of the urachus.

The generally accepted conception of the urachus has been that it represented the vestigial remains of the allantois and that this structure in normal adult life had become a mere fibrous cord. As a result of careful microscopical examination, Begg has demonstrated that the epithelial canal of the urachus persists through life and never becomes completely obliterated. The lumen of the canal may be interrupted by becoming filled with desquamated epithelial cells and commonly presents sacculations at various points. He insists upon the presence of a pervious urachal canal at all ages. A definite communication between the urachal canal and the bladder cavity, however, does not exist in all cases. That such a communication does exist in a surprising number of cases, though, seems to have been amply demonstrated by this investigator. Of twenty-one cases examined, Begg found that the urachus and bladder were continuous in seven. An acceptance of this work, then, must modify to a considerable extent the prevailing conceptions of the urachus in its relation to the bladder.

Another interesting consideration of the urachus brought out by Begg is that the urachus performs a definite function. He suggests that its purpose is not that of a passive suspender of the bladder apex, but that as a muscular organ it takes in the slack as the bladder empties itself, in the same manner as "the Arab, by attaching a string to the closed end of his water skin, facilitates the outflow of its contents". Histological examination of the urachus has demonstrated the presence of longitudinal muscle bundles just beneath the connective tissue covering of this structure. These muscle fibers are said to arise from those of the bladder. The suggestion that the urachus gives a "point d'appui" for contraction of the muscles of the bladder, whereby the bladder is compressed uniformly from without and steadied by the urachus, seems very reasonable.

The following case is of interest, inasmuch as it illustrates a possible result of the conditions described.

A retired railroad employee of seventy-eight was admitted to the Massachusetts General Hospital on July 5, 1930, complaining of suprapubic pain. His past health had been good except for increasing difficulty in urination for three years. Five weeks before admission to the hospital, following a period of unusual exertion in caring for a sick wife, he began to have intermittent chills. Shortly afterward he noticed pain and marked tenderness in the suprapubic region. Urination became more frequent and painful and the urine passed was the color of mahogany. Complete retention had required catheterization.

Examination showed a patient in poor general condition. The skin and mucous membranes were dry and the tongue heavily coated. A low-grade fever was present with a white blood count of sixteen thousand. The heart was enlarged to the left, although there were no murmurs. The abdomen was prominent and very tender in the lower portion. Above the pubes a rounded, smooth, tender mass was easily felt. This extended upward to the umbilicus. The tumor was not freely movable but was a little more prominent on the right side of the body than on the left. It felt like an over-distended bladder. Rectal examination was painful and revealed nothing more definite than the presence of a moderately enlarged, soft prostate. The urine was cloudy and loaded with pus. Complete retention necessitated the presence of an inlying catheter. A barium enema disclosed a normal large bowel.

Cystoscopic examination showed a trabeculated bladder mucous membrane diffusely inflamed. The lateral lobes of the prostate were prominent. No tumor or diverticular opening was present.

Any apparent connection between the abdominal mass and the bladder having been apparently eliminated, it was considered probable that the tumor arose within the abdominal cavity, and an appendix abscess seemed likely.

Exploratory operation was performed under novocain infiltration. The abdomen was opened and revealed a glistening peritoneal surface, the absence of any free fluid, and, except for a few adhesions between the intestines and bladder, nothing abnormal. Within the anterior abdominal wall, however, was a firm rounded mass intimately associated with the bladder. This caused the peritoneum to bulge inward. The poor condition of the patient prevented further investigation and the wound was closed. He soon became comatose and died the day following operation.

Postmortem examination showed a mass composed of dense inflammatory tissue within the anterior abdominal wall between the peritoneum and the transversalis fascia. A large abscess cavity filled with thick yellow pus occupied its center. The lower end of this abscess cavity extended downward to the fundus of the bladder but no actual communication between it and the bladder could be demonstrated. The prostate showed a moderate degree of benign enlargement.

Microscopical examination of a portion of the abscess wall showed dense fibrous tissue with marked acute and chronic inflammation. Sections cut from tissue between the abscess and the bladder wall showed a small round sinus tract lined with pseudostratified columnar epithelium typical of a patent urachus.

The case is of interest in that it illustrates in a very striking manner the possible result of

Patent Urachus: Low power photomicrograph of tissue removed from between the bladder and abscess cavity. The open urachal canal lined with epithelium is well shown. Bundles of smooth muscle fibers are present just outside the sinus tract. A round cell infiltration as evidence of infection is present.

communication between the bladder and the urachus. Evidently the gradually increasing obstruction to the bladder from an enlarging prostate, accompanied by infection, had caused an extension of the inflammation through an open urachus to the perivesical tissues, the result being a marked pericystitis with abscess formation. Previously reported cases of a similar nature[3] have demonstrated the large part played by obstruction in lesions associated with a patent urachus. The patent urachus associated with bladder infection and obstruction, such as enlargement of the prostate, may account for certain cases of pericystitis of obscure origin.

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A CASE OF PYOMETRA IN A MALE PSEUDO-HERMAPHRODITE*

BY RICHARD P. MIDDLETON, M.D.†

THE present report concerns a pseudo-hermaphrodite who, in spite of strongly marked male secondary sexual characteristics and two testes, was found to possess also a well-developed uterus. A most unusual feature of this case was suppurative inflammation of the uterus which resulted in severe pyuria. A brief review of the literature has failed to disclose a similar circumstance:

N. F., a 19-year-old American student was admitted to the Peter Bent Brigham Hospital September 22, 1930, because of hypospadias.

The patient was born with undescended testicles and hypospadias of the perineal type. When he was about 5 years old, an attempt was made to repair the hypospadias. The operation was successful to the extent of producing a urethral canal leading to the under surface of the glans, but several fistulous openings in the floor of the penile and bulbous urethra remained. At the age of 6 he had evidence of a slight infection of the urinary tract which persisted for the following 5 years. Gradually the infection cleared up. When he was 15 an attempt was made to complete the urethra. This operation was not only unsuccessful but was followed by the appearance of another fistulous opening. The patient had no frequency, dysuria, or urgency until 1 year ago. At this time, following an attack of influenza, he developed what was thought to be acute cystitis which still persisted as a chronic infection when he came to the hospital. When the infection began he had frequency, urgency, burning and nocturia with cloudy and malodorous urine. His local physician repeatedly found considerable numbers of pus cells in the urine, but no red cells or casts. Under treatment by alkalies and forcing fluids there had recently been comparatively few pus cells. However, the urine was still occasionally cloudy and mild burning on micturition was sometimes noted. There was no history of hematuria or bleeding from the urethra.

Aside from the minor diseases of childhood the patient's past medical history was essentially negative except as above. Nothing in his general appearance or actions had ever occasioned the slightest doubt concerning his masculinity. He was fond of outdoor life, especially riding, and had recently spent two years on a ranch in the far west. The presence of manly proclivities was further suggested by the fact that he had a girl friend with whom he was said to correspond regularly.

Physical examination at the time of entry showed a tall, large-boned, well developed but rather poorly nourished young man. The voice was of deep masculine quality. The muscles were firm and there was no undue deposition of subcutaneous fat. The contour of the body was typically male, with broad shoulders and a narrow pelvis. Axillary and pubic hair was present, the upper border of the latter extending half way to the umbilicus. There was a good growth of beard. The eyebrows were rather thick. The skull was large with prominent parietal and frontal bosses and a prognathous lower jaw. The eyes, ears, nose, mouth and neck were normal except that the isthmus of the thyroid could be palpated. The breasts were flat, with no fatty deposits in the subcutaneous tissue. The heart and lungs were normal. Blood pressure was 130/70. Abdominal examination was negative, no tenderness, spasm or masses being made out. The extremities were normal.

Inspection of the genitalia showed an under-sized penis, the distal half of which was drawn downward by scar tissue on its under surface. A canal traversed the penis to the glans but it was interrupted by four accessory openings on the ventral surface of the shaft at or close to the midline. The largest of these openings was almost a half centimeter in diameter and the smallest no larger than a pinhead. They extended from near the tip of the penis to the penoscrotal junction. The scrotum was empty. The scro-

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tal skin was of the normal rugose texture. There was a slight furrow along the median raphe, but no suggestion of a vagina. Inguinal herniae were absent on both sides. The testicles could not be palpated in the inguinal canals. The first examiner thought he felt an unusually small but otherwise normal prostate, and did not note any other abnormality on rectal examination.

Laboratory studies showed no albumin or sugar in the urine. The first two sediments contained numerous white cells, but no red cells or casts. The third sediment examined revealed only an occasional white cell. Erythrocytes 5,870,000; hemoglobin 80%; leukocytes 12,300; blood urea nitrogen 14 mgms. per 100 cc.; phenolsulphonphthalein 90% in 2 hours and 10 minutes; Wassermann and Hinton tests negative.

On September 29, 1930, plastic repair of the urethral fistulae was attempted. Under spinal anesthesia, a perineal urethrotomy was performed to divert the urinary stream and an inlying catheter left in the bladder. The edges of the fistulous openings were freshened and sewed in two layers, fine catgut being used for the mucosa and silk for the skin. Before union occurred the stitches cut through and separation of the edges followed. Breaking down of the wounds was favored by the presence of infection which apparently descended along the urethra. A second attempt at plastic repair on October 15, 1930, likewise resulted in failure.

During the period of these operations the patient had occasional mild elevations of temperature and a leukocytosis ranging between 16,000 and 27,000. His urine contained only a slight trace of albumin and an occasional leukocyte. The inlying catheter was removed October 24 and the patient permitted to void. From this time it was noted that he was passing increasing amounts of pus in the urine, although there was only slight frequency of urination and very mild dysuria. The pyuria became so extreme that a 2 litre bottle of urine deposited a sediment over an inch deep consisting almost entirely of leukocytes. The pus was not evenly mixed with the urine, but came chiefly near the end of the urinary act, at which time the stream was almost pure pus. The urine became malodorous. The patient felt well enough to be up part of the time, but he began to look pale and somewhat cachectic.

On cystoscopy to determine the source of the infection it was noted that the stream of urine lacked a normal trajectory, being weak and hesitant as if the bladder lacked its usual tone. The bladder mucosa was not severely inflamed and the ureteral orifices were fairly normal. They were catheterized without obstruction with No. 5 catheters. A fair flow of faintly turbid urine was obtained from both sides. Cultures were made and an x-ray picture taken with the catheters in situ. It showed the ureters pursuing normal courses. A rectal examination was made, which revealed a large mass high in the pelvis lying between the bladder and the sacrum. This mass was interpreted as being, most probably, a neoplasm in an undescended testicle which by its size and position pressed on the bladder and interfered with its drainage. In spite of its high position, which caused it to be missed at the general physical examination, the mass could not be palpated above the pubis.

X-ray films of the skull, chest, pelvis and long bones showed no evidence of metastases. At laparotomy, examination of the pelvic viscera showed that the mass was not a new growth of a testicle but a uterus (Fig. I), much enlarged so as to correspond to the size of about a two months' pregnancy. The organ had a full, turgid appearance and its fundus was anteverted and slightly anteflexed. The fundus was entirely unsupported laterally, there being no tubes or round ligaments to find attachment near the cornua. At each cornu was a small projecting nodule about the size of the tip of one's little finger, but no uterine tube. Attached at a lower level to the sides of the uterus and extending lateralward in the pelvis were peritoneal folds resembling broad ligaments. In the free upper borders of these folds ran cord-like thickenings which ended distally by partially encircling smooth, white, glistening gonads about the size and shape of olives. On attempting to trace these cords, which were in fact vasa deferentia, downward and toward the midline they were seen to approach the uterus on its lower lateral margin. The pseudo-broad ligaments were attached to the side walls of the pelvis by light

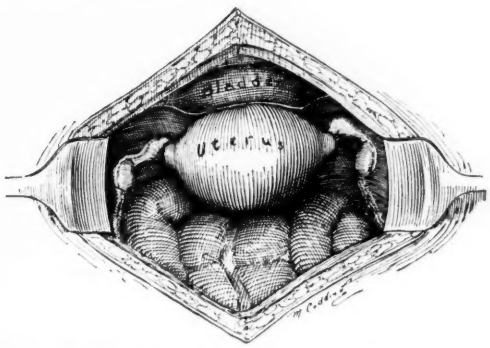

FIG. I. Pelvic viscera as seen at operation, showing close resemblance to female internal genitalia. The gonads, however, are testes and the cords extending from them toward the uterus are vasa deferentia.

folds of peritoneum which appeared to carry the spermatic vessels. The uterus was firmly fixed deep in the pelvis, but the relations of its lower end could not be accurately defined from within the abdomen.

The right gonad was removed for confirmation of the patient's true sex. Subsequent histological examination disclosed the typical structure of an undescended testicle with absence of spermatogenesis and hyperplasia of the interstitial tissue.

Palpation of the uterus showed that its wall was thin and the whole organ fluctuant. Exploratory aspiration with a fine needle and syringe yielded 20 cc. of very foul smelling grayish-yellow pus. Immediate smear showed large numbers of gram positive cocci and gram negative bacilli. In view of the highly infectious nature of its contents, immediate extirpation of the uterus was considered too hazardous to be justifiable. A mattress suture of fine catgut was placed to ensure closure of the puncture site and the abdomen closed, leaving a rubber tissue drain in the cul-de-sac. The patient was placed in exaggerated lithotomy position and a perineal incision made. The formerly created urethrotomy opening in the bulbous urethra, which was still slightly patent, was enlarged. The orifice connecting the uterus with the urinary tract was discovered in the posterior wall of the prostatic urethra (Fig. II) with the aid of a blunt probe. A medium-sized catheter was introduced into the uterus on a stilette and fastened in place with a suture. There was an immediate copious discharge of foul pus. A button catheter was left in the bladder, both tubes emerging through the perineal wound.

Following this operation the patient did well. The infected uterine cavity was irrigated daily with small amounts of 1-10,000 silver nitrate solution and 1 per cent. mercurochrome was occasionally instilled. The catheter fell out of the uterus 7 days after the operation. After that a coudé woven catheter was repeatedly introduced for irrigation. With a finger in the rectum as a guide there was no difficulty in finding the orifice in the posterior urethral wall. The efflux changed from foul thick purulent material to a thin, turbid, non-odorous fluid of watery consistency. The urine became practically clear. The

patient's appetite and color improved greatly and he said he had not felt so well for many months.

Extirpation of the uterus was performed November 25, 1930 under avertin anesthesia supplemented by ether. It was approached transabdominally, the scar of the previous operation being excised. The uterus was found to be less tense than formerly, but practically as large as before. Owing to the presence of numerous adhesions, mobilization of the organ was tedious, but it was possible gradually to free it down to its attachment to the base of the bladder and to the prostatic urethra. On its posterior aspect the uterus extended downward 2 inches further than anteriorly and ended in the region of the urogenital diaphragm. Amputation of the uterus was carried out at as low a level as seemed prudent in view of the close proximity of the ureters. The small remaining vestige was found to have a central cavity which could be dilated sufficiently to admit one's index finger. It was scraped with the curette and swabbed with phenol to destroy its epithelial lining. The stump was closed with catgut sutures in a manner similar to that employed in the usual supravaginal hysterectomy and the region peritonealized. A cigarette wick was placed in the cul-de-sac and the abdomen closed.

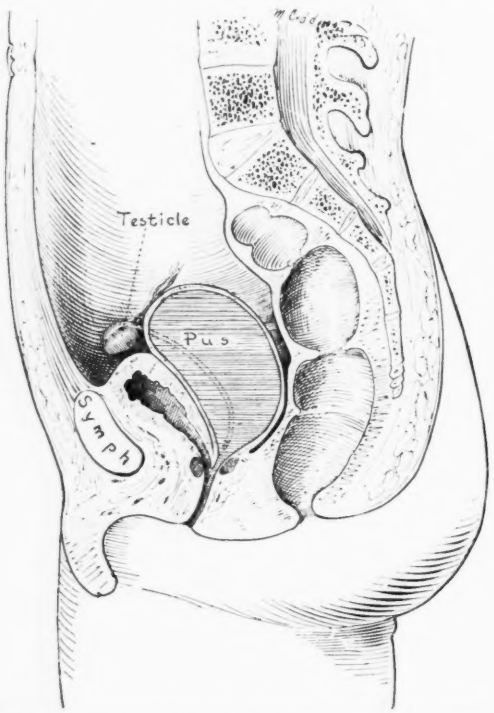

FIG. II. Sagittal section of pelvic organs to show communication of large, pus-filled uterine cavity with posterior urethra.

The patient made a good recovery and was discharged from the hospital December 22, 1930.

PATHOLOGIC REPORT

The uterus weighed 46 grams and measured 5.5 x 5 x 5 cm. Along its lateral margins were two cord-like structures which appeared to represent vasa deferentia. On opening the uterus, a large cavity lined with a thin, glistening mucosa was revealed. There was no recognizable differentiation of uterus and vagina. The wall was firm and about 8 mm. in thickness. The cornua terminated in small blind pouches, with no evidence of uterine tubes. Microscopic examination showed the organ to be lined with stratified squamous epithelium averaging 4 to 6 cells in thickness. Embedded in the subepithelial tissue were rare epithelial lined spaces which were presumably analogous to the glands of female uterine mucosa. They were lined by tall columnar or pseudo-stratified columnar epithelium. The remainder of the uterine wall exhibited changes due to chronic inflammation, with cellular infiltration and predominance of dense fibrous tissue over smooth muscle. The cord-like structures on either side of the uterus were found to contain lumina lined by a transitional type of epithelium such as is found in the normal vas deferens.

1. PYONEPHROSIS RESULTING FROM AN ABERRANT RENAL ARTERY
2. A CASE OF ENCAPSULATED PAPILLARY ADENOCARCINOMA OF THE KIDNEY*

BY J. DELLINGER BARNEY, M.D.†

I WISH to report two rather unusual and very interesting cases.

The first is that of a young man who came to the Urological Clinic at the Massachusetts General Hospital with pain and tenderness in the right loin. A mass was felt corresponding in shape and position to the kidney. The urine was loaded with pus. The patient was extremely toxic, he was running a high temperature and was altogether in poor condition. Careful study of his urinary tract showed a marked degree of dilation of the pelvis and calices of the right kidney and the organ was much enlarged. There was no evidence of urinary calculi. The urine from this kidney was loaded with pus and the function was nil. At the uretero-pelvic junction there was a distinct and abrupt break in the shadow of the injection medium which suggested the possibility of aberrant vessels crossing at this point. This suspicion was strengthened by the fact that there had been repeated and severe attacks of renal colic and also that there was neither a history of the passage of stones nor evidence of their presence at the time of my examination.

A few days after the first cystoscopic examination, another was done to determine the condition of the left kidney. There was however no history of trouble in this organ. The examination showed a normal urine from this kidney and a good excretion of phthalein both as to appearance time and amount. The pyelogram showed moderate dilatation of the pelvis of the kidney but the calices were normal. Here also there was a definite break in the shadow between ureter and pelvis. As aberrant vessels are so frequently found to be bilateral it was regarded as probable that the same condition existed on the left side as on the right.

The patient obviously required operation but his general condition was so poor that nephrectomy on the right side could not safely be done. It was therefore decided to do a nephrotomy under local anes-

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thesia, drain the kidney until the patient's condition improved and then do a nephrectomy later. Nephrotomy was therefore done. The kidney was found to be much thinned and a large self-retaining catheter was easily passed through the cortex into the pelvis and sutured in place both by way of the capsule and the fascia. Several ounces of thick, foul yellow pus

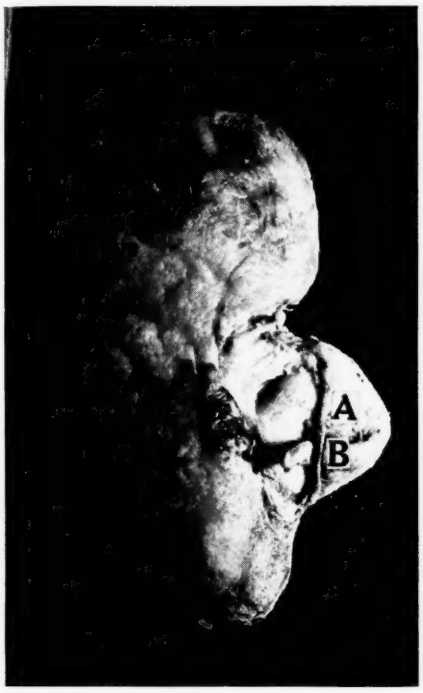

FIG. 1. Pyonephrosis caused by aberrant vessel from lower pole of kidney crossing and obstructing the ureter. A=aberrant vessel, compressing ureter at B.

escaped at the time of operation and continued for several days. About a fortnight after this procedure the patient's condition was so greatly improved that nephrectomy was undertaken. No particular difficulty was experienced in the operation. The kidney was densely adherent throughout, was greatly enlarged and was merely a thin-walled sac filled with purulent urine. No stones were found. Careful search was made at the ureteropelvic junction for aberrant vessels and this search was rewarded by finding a definite band over which the ureter was drawn up in a sharp kink. By exercising great care the kidney with a portion of the ureter, together with the obstructing aberrant vessels still in relation one to the other, was removed. (Fig. 1.) Convalescence was entirely normal and the patient left the hospital in excellent condition.

A few weeks later he returned to the Out Patient Department saying that he had been having frequent attacks of pain in the region of his left kidney. These attacks were accompanied by nausea and vomiting and were severe enough and frequent enough to incapacitate him.

Having in mind the findings at the time of the examination of this kidney it was thought probable that these attacks of pain were due to ureteral obstruction from aberrant vessels. In the belief that if this condition existed it would ultimately lead to destruction of the kidney, an exploratory operation was advised.

The kidney was found to be entirely normal in size, color, consistency and position and a most thorough search of the ureteropelvic junction revealed no aberrant vessels.

It may be worth while remarking at this point that such vessels are sometimes overlooked partly because they are often of extremely small size and partly because they are sometimes situated so far up in the hilum of the kidney that only careful search will reveal them.

The patient recovered from this last operation in a satisfactory manner and so far has been free from pain. No explanation is offered for the pain on the left side. It may possibly have been due to compensatory changes following the nephrectomy. Not the least of the interesting features of this case is the specimen which shows, better than is usually the case, the exact relation between the ureter and the aberrant vessel. It also illustrates very well the difficulty that is always encountered in making a diagnosis of the presence of an aberrant vessel. In this case there was the same appearance on the one side as on the other, of a hiatus in or interruption of the shadow of the injection medium at the ureteropelvic junction. This picture, together with the history, would certainly justify the belief that aberrant vessels would be found in both kidneys. The diagnosis of this condition is still difficult and uncertain and generally is to be made by a process of elimination.

The second case concerns a man of 37 who first came to the Urological Out Patient Department in July 1920.

Six months previous to this he had a bad fall, and

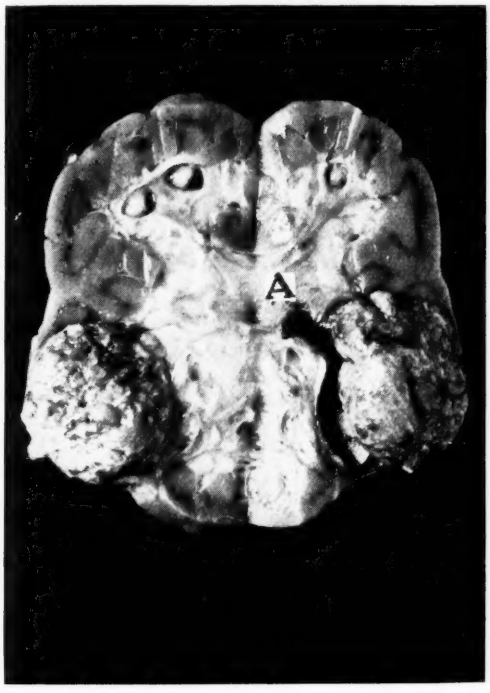

FIG. 2. Papillary adenocarcinoma occupying and encapsulated by lower calyx, the orifice of which is blocked by calculus, A. The areas of calcification in the new growth are represented by the points of white.

from that time on he had had intermittent hematuria with pain in the right side. He was cystoscoped two or three times but apparently no definite diagnosis was made, although it was established that the hematuria was from the right kidney. The x-ray at that

time (unfortunately now destroyed) showed a peculiar looking area in the region of the middle calyx of the right kidney and two or three areas of apparent calcification were seen. Before a definite conclusion could be reached as to the nature of the conditions found in the right kidney the patient disappeared from the clinic.

In September 1930 he returned to the hospital stating that intermittent hematuria had been noticed for some time, together with occasional attacks of moderate pain in the right kidney region. The patient was in excellent general condition. Cystoscopic examination again showed blood coming from the right kidney. The urine contained also a moderate amount of pus. X-ray showed a circular, circumscribed calcified area about the size of a golf ball in the region of the middle calyx of the right kidney. Both the X-ray Department and we were unable to say whether this was a calcified neoplasm or the calcification occurring with an old tuberculous lesion. There was also another more densely calcified area, about the size of a peanut which we all considered to be a stone in the pelvis of the kidney. The pyelogram showed a filling defect which while compatible with neoplasm might also occur with a tuberculous or other inflammatory condition.

Nephrectomy was performed by me a few days ago. The kidney was moderately enlarged and somewhat adherent, but was removed without difficulty. During the process of freeing the kidney from its fatty capsule there was seen a rounded, firm, yellowish mass, about the size of a golf ball, protruding from the middle of the posterior surface of the kidney. This mass was obviously a neoplasm and was so proven when the kidney was opened at the conclusion of the operation. This mass was definitely and densely encapsulated and apparently occupied the position of a middle calyx. In the pelvis and more or less engaged in the orifice of this calyx was a stone the size of a small peanut. (Fig. 2.) An examination of the kidney by Dr. Tracy Mallory showed the growth to be a papillary adenocarcinoma. No evidence of metastases was found before or during the operation, nor has such evidence been found since. The patient made a smooth convalescence and has been seen recently. He appears to be and feels very well but will be kept under frequent observation.

This case is most unusual in that we have fairly definite evidence that this tumor of the kidney has existed for at least ten years previous to operation; that it occurred simultaneously with calculus; that the irritation produced by the calculus may have been a factor in the production of the neoplasm; and finally that not only was the neoplasm definitely encapsulated but also has not produced any demonstrable metastases or extensions.

THE PREVENTABLE INFECTIONS INCIDENT TO PREPARING FOR PROSTATIC OPERATION*

BY EDWARD L. KEYES, M.D.†

THE thesis to be expounded is this—(1) Although it is as yet all but impossible to carry through the treatment of prostatism in an aseptic manner, asepsis should nevertheless be our ideal. (2) The theory upon which we ancients were educated, i.e., that the over-distended uninfected prostatic must be drained until he shall have passed through a period of infection before prostatectomy, is an unsound one. (3) Actually the preliminary period of treatment is one of decompression during which infection should be avoided by every means in our power. Thus we shall become progressively more and more expert in controlling or altogether preventing infection during this period. (4) A brief experience with prevesical section has fortified in my mind the conviction that there are two sources of infection during the preliminary treatment: (a) the catheter, (b) the prevesical infection which may result from suprapubic drainage employed for the relief of inflammatory complications resulting from the use of the catheter. (5) Catheter infection is certainly traumatic in origin and apparently is due to irritation of the previously infected prostate by the catheter. Even when there is no history of previous infection, the acute catheter infection seems, like acute nephritis, to be but a lighting up of a previously unrecognized chronic condition.

It is perhaps seven years ago that in the service at Bellevue Hospital an incident occurred which has remained fixed in my memory because, though it seemed to have a meaning, that meaning escaped me. An old and feeble man had been brought to the ward in so desperate a condition from prostatic retention of urine that suprapubic drainage of his bladder was immediately established in the hope of minimizing the discomfort of his few remaining days. But he did not die; nor did he greatly improve. At most he sat slumped beside his bed for the ninety days allotted him at that hospital. Then, rather than condemn him to continue the misery which suprapubic drainage implies for an indigent man, it seemed kinder to remove his prostate at whatever peril to his life. This was done and to the surprise of all he was none the worse for the operation. His convalescence was uneventful. He promptly healed and his life was again worth living.

Do not set down such a case as an exception. It is the rule. Look over your own case histories of patients who have worn a suprapubic tube for thirty days or more prior to prostatectomy. If you have had my good fortune, you will not find an operative death among them. There is a reason for this. It seems fourfold, viz.,

1. The patient shows a certain vitality by surviving drainage,

2. He has been drained long enough for his renal and cardiac functions to have become stabilized at maximum efficiency.

3. The Freyer principle of postprostatectomy

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drainage is inevitably established; i.e., the wound will remain gaping so as not to retain blood clots, and

4. The field of operation has become immunized to infection.

We have not the time tonight to discuss thoroughly these four items in the prognosis of prostatism. Let us confine our attention to the one dominant preventable occasion for the failure of our treatment, viz., infection.

The Shah of Persia, when invited to visit Epsom Downs, is reported to have refused with the explanation, "It is known to me that one horse can run faster than another." Equally is it known to me that prostatics die of various causes. And it is not unknown that Dr. Francis Watson, who favored the old-fashioned perineal operation, formally stated he had never had a postprostatectomy death due to infection. Yet pray consider the pitfalls of prostatism.

At the onset of treatment, for example, we recognize the need for cleanliness and gentleness in the first passage of a catheter. Yet we still fear the 9% mortality attributed some twenty years ago by Watson to this moment of treatment. In skilled hands an accident is rare enough. But who among you cannot recall a case comparable to the following?—

Mr. S., a muscular, active manufacturer, 68 years old, yet still in control of a large business, contemplated a trip to Europe. He summoned his physician, a competent, careful man, to perform the customary annual physical examination. At the conclusion of this he was informed that but for a slight enlargement of the prostate, his condition was perfect. But he protested that he had to void his urine once or twice at night. Accordingly a rubber catheter was passed, not quite easily, not quite comfortably, and draining 115 c.c. of residual urine with a few drops of blood.

This was on the morning of March 3, 1927. That afternoon I was called and found the patient in torture, with retention all but complete and incessant calls to pass a few drops of urine. The bladder was readily emptied and our best nurse installed with instructions to catheterize as often as the patient required. On the morning of the following day the bladder irritability was, if anything, increased. The patient was abnormally irascible and restless, the temperature slightly elevated. An indwelling catheter gave no relief. The patient repeatedly pulled it out. He needed immediate surgery, but his social position occasioned the usual "excursions and alarums" and the bladder was not drained suprapubically until March 5, just two days after the first passage of the catheter. At this time the following pertinent observations were made:

Temperature: 101°; Pulse: 84; Respiration: 26.

Blood N. P. N.: 55; Creatinin: 1.4; Sugar: 124.

Convalescence was uneventful. His mind immediately cleared, with complete lapse of memory as to events subsequent to the first catheterization. Maximum temperature postoperatively 101.4°. On the eighth day intravenous P. S. P. gave 13% excretion in twenty minutes and the blood N. P. N. had risen to 60, Creatinin 2.1. Four days thereafter P. S. P. 40% in thirty minutes; N. P. N. 48, Creatinin 1.6. Prostatectomy was successfully performed sixteen days after the first catheterism. The postoperative course was almost afebrile.

The amount of prostatic tissue removed was considerable. Dr. James Ewing reported upon it as follows:

"The prostatic tissue is the seat of a remarkable type of chronic hypertrophic prostatitis complicated by very extensive suppurative and phlegmonous inflammation. This mixed process extends throughout all portions of the gland. The acini are everywhere filled with mucus and often with pus. There are numerous wide areas where the interstitial tissue is necrotic, producing liquefaction abscesses, 1 to 3 mm. wide. The epithelium, for the most part, is of normal type, but there are many foci where the epithelial cells are very atypical, yet I find no spot which I think is carcinomatous. These epithelial changes must be referred to the severe exudative inflammation."

This case is a familiar enough example of the unexpected and in a sense unforeseeable way in which the prostatic may be in peril of his life from the first passage of a catheter. Evidently what distinguishes this case from the great majority of prostatics who pass from catheter to prostatectomy quite peacefully, is a hyperacute prostatitis, which occasioned the immediate complete retention and grave infection. We are inclined to think of such cases in terms of retention or of renal infection. Yet is not the prime infection always and the sole infection often in or about the prostate?

Perhaps you will not grant this conclusion. If not, it must be left to the later scrutiny of your open minds. Pray note in your own practice that the inflammatory reaction of the large prostate to the catheter is by no means proportionate to the trauma inflicted. Most of the prostatics who reach the urologist from inexpert hands give a clinical picture quite opposite to the one just cited. There is much urethral bleeding, considerable difficulty in catheterism, little sepsis. It seems probable that Mr. S. had a latent infection of his prostate which merely awaited the gentle aseptic passage of a catheter to flame into acute prostatitis causing acute retention and septic toxemia.

We may be thankful that such cases are rare, for they require immediate suprapubic bladder drainage to save life by eliminating any further catheter trauma. But less dramatic cases of the same type are common and the extreme example just given may serve as a clue to that question which so often arises as to whether the prostatic is best treated by suprapubic drainage or by the catheter. There is today the greatest disparity in the practice of urologists. Most of us in the recent past have been satisfied to follow the theory so well established by Braasch. We prepare for prostatectomy by the catheter, when that seems feasible, reserving preliminary suprapubic drainage for the chronically over-distended and infected bladder and for those patients who do badly with the catheter. The practice of accepting with complacency those deaths that occur before prostatectomy and callously excluding them from our published statistics has blinded us to the frequency, the gravity and the preventibility of catheter infection.

Debate as to the relative virtues of perineal and suprapubic prostatectomy gets us nowhere. Indeed Lowsley's practice of making suprapubic section a prelude to perineal prostatectomy suggests that the catheter is a dangerous weapon whatever the type of operation.

We are still further blinded to the dangers of the catheter by the current feeling that the over-distended and uninfected bladder must be infected as well as decompressed before the patient is ready for prostatectomy. In this respect the chronically over-distended* bladder of the prostatic is regarded as only one degree more amenable to treatment than that of the man with a broken back. We recognize that the spinal case presents almost insuperable difficulties in urinary drainage. Whether treated with or without catheter he is likely to die of urinary septicemia. We recognize in him that this urinary septicemia, secondary to catheter infection—i.e. to what is usually prostatic infection—is an evil thing. But the over-distended prostatic, thanks to bladder decompression, usually survives and we complacently regard his urinary infection as a necessary incident to his cure. Young and Cabot have opposed this thesis. And they are quite right. Infection was yesterday a necessary accompaniment of decompression. We hope it may not be so tomorrow. By eliminating urethral trauma and immunizing operative wounds of the bladder this may perhaps be accomplished. But I am running ahead of my subject.

A third element in our blindness as to catheter infection is the confusion introduced by the very measure we take to relieve this. We perform suprapubic cystotomy. We thereby open the suprapubic space to infection both from the skin and from the bladder. The pelvic infection that ensues is often quite without local symptoms, for there is capillary drainage alongside the suprapubic tube. It is thus not clearly distinguished from the urethral infection.

Of these three elements of confusion, the first —the statistical one—has been attacked[1] by the publication of statistics on the prognosis of prostatism, the prospects of the prostatic himself, as distinguished from the prognosis of prostatectomy. The second item, the "necessary infection", is being attacked this evening. The third item, confusion of pelvic and prostatic infections, has been revealed by prevesical section[2].

Prevesical section is an attempt to eliminate infection of the prevesical space by opening the bladder in two operations. We have long been familiar with the virtues of a two-step colostomy and thyroidectomy. Prevesical section applies this knowledge to cystotomy. At the first operation the vault of the bladder is adequately bared and fixed to the belly wall. The bladder is opened a few days later. (At this second operation the prostate may be removed or it may seem preferable to defer prostatectomy to a third operation.) We thus eliminate pelvic infection as a complication of suprapubic cystotomy. Now pray distract your attention from prevesical section as a therapeutic measure and consider only its diagnostic virtue. If prevesical section and bilateral vasotomy are done and an indwelling catheter inserted as soon as the prostatic enters the hospital and then infection ensues, this infection must arise from the urethra or the prostate. Now out of 38 patients thus treated on an active hospital service, 4 died before prevesical section, 2 immediately thereafter and 33 (87%) reached prostatectomy. Because of prostatic infection or urethral irritation, 12 of these 33 required suprapubic drainage as a separate operation before prostatectomy was performed; the prostatectomy in these 12 cases was therefore a three-stage operation. Hence in this short series as many as one in three (approximately) showed considerable prostatic infection before prostatectomy.

One would scarcely have looked for so large an incidence of prostatic infection as this. Yet consider a familiar finding. In doing a two-stage prostatectomy we are familiar with the remarkable shrinkage of the prostate that so often occurs between suprapubic drainage and prostatectomy. This tells the same tale. Such shrinkage of the prostate is due to subsidence of prostatitis.

Now let us turn our attention to prevesical section as a therapeutic measure to prevent wound infection. In performing my first prevesical sections, the vasa were tied off before the belly was opened. Convalescence from this operation was marked, as a rule, by a temperature reaction no greater than 101°F. But occasionally the temperature rose much higher and, in one case, afebrile before operation, the postoperative temperature rose to 104°. Yet as usual the wound looked perfectly clean when, after the temperature subsided, it was reopened and the acriflavine gauze pad removed. Dr. McLellan then suggested that contamination of my fingers from the scrotal skin perhaps accounted for these infections. The order of procedure was therefore changed. The belly was opened before the scrotum. The unexplained rise of temperature never occurred again.

It was next observed that prevesical section realized (in conjunction with preliminary vasotomy, appropriate decompression and proper postprostatectomy venting of hemorrhage by the Freyer principle) an ideal never before attained. It insured speedy, safe and comfortable convalescence from operation for the prostatic who sought relief while he was yet well and vigorous. For such patients the average interval between prevesical section and prostatectomy was four days, the postprostatectomy convalescence uneventful and as brief as by any other method.

The third observation from prevesical section,

*Acute over-distention does not enter into this discussion.

however, was not so encouraging. As already stated, a large minority of the patients required bladder drainage after prevesical section and before prostatectomy in order to rid them of the inconvenience of prostatitis (resulting from the indwelling catheter) with its threat of sepsis and pelvic abscess.

The solution of this difficulty was suggested in the discussion of the paper on prevesical section read by me last summer before the American Urological Association. At that time to my allegation that prevesical section relieved the patient from the danger of wound infection with its mortality of five to ten per cent., one of Dr. Granville MacGowan's pupils retorted that his method of suprapubic cystotomy* accomplished this same result. And why not? It should surely be possible to drain the bladder without contaminating the suprapubic wound.

During the past year, accordingly, the following technique of preliminary cystotomy has been developed. On admission to hospital, candidate for prostatectomy is taken to the operating room and, under nupercaine spinal anaesthesia,—

1. The bladder is emptied by catheter washed clean and 25 c.c. of 1/1000 acriflavine solution injected.

2. The belly wall is opened to the bladder.

3. The bladder is distended with air, grasped with Allis clamps and elevated while a vertical incision in its muscle is made just large enough to permit the unperforated mucosa to bulge out in the form of a small bubble.

4. As the fibres of bladder muscle are divided, the incision is held open by removing and replacing the Allis clamps at deeper levels until finally three of these clamps are left attached to the deepest layer of muscle to mark the edge of the exposed mucosal bubble.

5. By pressure of the fingers within the wound, the bladder contents are then expressed as well as may be through the catheter that has been left in the urethra. To be sure that the bladder has been sufficiently emptied, the pressure is released and gentle traction made upon the three Allis clamps. The bubble of mucosa should now have disappeared and been replaced by a sunken, sucked-in mucosa, scarcely distinguishable from the surrounding muscularis except by the position of the three clamps. The urethral catheter is then withdrawn.

6. The wound is flooded with 1/1000 acriflavine solution and the bladder attached to the rectus sheath both above and below the projected point of puncture with chromic gut sutures, care being taken not to perforate the mucosa with these and leaving plenty of room for the ultimate bladder incision.

7. Next the bladder is again elevated by traction upon the Allis clamps, the sucked-in mucosa perforated and an aspirating tube inserted to suck the cavity dry.

8. This tube is then withdrawn and replaced by a 30° F. suprapubic tube. As this is pushed in the mucosa turns in about it. The muscularis is closed tightly about the tube by plain catgut sutures. An inverting row of sutures is taken if possible.

9. Cigarette drains are placed in the suprapubic space both above and below the tube, and the abdominal wall closed not too closely about these. One of the skin sutures fixes the tube.

10. The two vasa deferentia are divided and ligated with their surrounding lymphatics in the upper part of the scrotum.

11. After the patient has been returned to bed, low decompression is applied to the bladder *via* the suprapubic tube.

By this technique a clean wound has been assured. If the operation is "of election", in an interval of calm, prostatectomy may be performed three or four days later. The superior bladder-belly wall suture must be respected as marking the upper limit of safety for slitting the bladder wall. In order to reopen the wound as little as possible, the prostatectomy is performed with one or two fingers in the urethra aided by counter pressure of two fingers in the rectum.

The above technique is applicable to all patients except those whose urethras have been so mutilated that they cannot be catheterized. In this event the over-distended bladder is to be exposed and its muscles incised in the manner described. Then at a point to one side of the incision in the muscularis, the bladder wall is punctured obliquely by a large needle (size 18) attached to the aspirator. Through this the contents of the bladder are sucked out until, with lifting of the Allis clamps, pressure is negative in the mucosal bubble.

By this technique one may hope to eliminate for the prostatic the infection that complicates the more familiar methods of treatment preparatory to prostatectomy, whether by catheter or by more casual methods of suprapubic cystotomy. The wound remains clean and the annoying delay incident to two-stage prostatectomy is eliminated. With Tuesday and Friday as operating days, the uncomplicated case may be drained on either operating day and the prostate removed on the following one.

The experience with prevesical section has been so enlightening that this procedure is discarded with great regret. For reasons that do not need to be explained at length prevesical section is probably the preferable method of attack preliminary to suprapubic lithotomy for

*He sutures the bladder to the abdominal wall both above and below the point where the bladder is to be opened, thus shutting off most of the prevesical space from contamination before the bladder is opened.

large phosphatic stones, but for prostatics the clean preliminary cystotomy seems the operation of choice.

It would be appropriate to give you some statistics illustrating the benefit derived by my patients from the application of these theories but unfortunately not sufficient time has elapsed for the accumulation of a sufficient number of cases to prove anything by figures. My own opinion is established, as you perceive, upon a gradual progress toward my present position during a number of years past. But the operation I have advised, with entire elimination of catheter treatment, has been performed so few times—a dozen or so—that its entire success is no criterion for your judgment.

The figures that can be presented represent the relatively good effect of prevesical section. While we were developing and subsequently practicing this operation, 278 prostatics entered the hospital, 14% refused or were refused operation, 15% died of the disease or of the treatment, 71% survived operation. The prostatectomy mortality as a whole was 10%.

During this period my associates were discouraged from employing prevesical section so as to give a control series of cases. My two-stage prostatectomies, including the prevesical section cases, showed a mortality of 6%. Others had a mortality twice as high.

TABLE I

	No Oper.		Ureth. Oper.		Drain Only		Prostatectomy 1st St.		2nd St.	
		D		D		D		D		D
Keyes										
191 Patients	18	7	10	1	9	7	41	5	113*	7
Others										
87 Patients	20	1	—	—	8	5	13	3	46	6
	—	—	—	—	—	—	—	—	—	—
Total 278	38	8	10	1	17	12	54	8	159	13

*Including 33 prevesical sections.

SUMMARY

1. Attention is called to the importance of infection occurring in the course of preparation for prostatectomy.
2. It is suggested that complications and deaths attributed to renal infection, septicemia, etc., are usually due to infection originating in the prostate as a result of catheter trauma or in the pelvic cellular tissue as the result of suprapubic cystotomy.
3. Catheter infection is usually primarily an acute prostatitis excited by trauma to a prostate probably already infected. It can therefore only be prevented by eliminating catheter treatment.
4. Prevesical section has made clear the distinction between catheter infection and cystotomy infection by eliminating the latter.
5. A technique is described whereby suprapubic cystotomy may be performed without resulting infection.
6. Inasmuch as prevesical section implies the use of the indwelling catheter, it should be discarded in favor of immediate preliminary cystotomy by the technique described. The catheter should, so far as possible, be discarded in the treatment of prostatism.
7. Prevesical section should, however, probably be retained as the operation of choice in preparation for suprapubic lithotomy for large phosphatic calculi.

REFERENCES

1 Keyes: Penn. M. J., July, 1930.
2 Keyes: J. Urol., xxiii: 119, 1930.

Discussion

Dr. William C. Quinby: We are very fortunate in having Dr. Keyes read this paper to us because not only does it come from him but also because it sounds a new note, or at least it puts the accent a little different from what we have been accustomed as regards this subject. I well remember when a student being seriously told by one of my instructors in discussing the human urinary bladder, that it was a splendid organ, that infection in the bladder was practically never primary, absorption from the bladder was very, very slight, and the remarks were summed up by the statement, "Gentlemen, you can spit in the bladder and it won't make any difference." That attitude was more or less generally found at that time. We have come a long way since then and I am delighted to have heard Dr. Keyes' paper tonight because in still another way, and much more in detail, it emphasizes the fact that surgery should always be safeguarded by the avoidance of infection whenever possible.

Dr. A. L. Chute: Dr. Keyes almost persuades me that certain things are true which I do not really believe are. He has two hypotheses: first, that certain infections of the prostate itself we often attribute to infections of the kidneys and bladder. I believe this is probably true. I have recently had a man under my care, whom I saw after he had been catheterized for a few times: he had a large residual and a prostate that was perfectly huge. He had a temperature, high leucocytosis, and his condition was poor, both mentally and physically. He has cleared up without operation so that now he has a prostate which I cannot make out as particularly enlarged. He has a two ounce residual; his urine is clear. I believe that this man is of the type of which Dr. Keyes speaks —a type which I believe I have often overlooked and have ordinarily supposed to be suffering from a pyelonephritis.

Regarding the second point that Dr. Keyes has stressed, the tremendous care of opening

the bladder suprapubically, I must confess that it does not seem so important to me as it does to Dr. Keyes. I had one man who died of sepsis some three years ago. This was a pretty generally disseminated sepsis, with osteomyelitis of his pubis and infection of both kidneys. This patient also had vegetations on his heart valves. Whether the sepsis started in the heart and the other foci were secondary, or whether the endocarditis was secondary to the infection of the os pubis, I cannot say, but this is one of the few serious sepses that I have seen following a suprapubic cystostomy. I do not hesitate to do a cystostomy in one stage. I believe, however, it is very important to make adequate provision for drainage by wicks in the space of Retzius, but I cannot quite agree with Dr. Keyes as to the frequency and seriousness of our preliminary operation for suprapubic prostatectomy when we put in a large tube for bladder drainage and make adequate provision for properly draining the prevesical space.

I have enjoyed Dr. Keyes' paper very much, as I always do, and I am sorry to disagree with him, as I often do.

Dr. Clyde L. Deming, New Haven: I have certainly enjoyed Dr. Keyes' paper. I believe it hits a high spot in the suprapubic treatment of our prostatic cases. I have been interested with respect to infections in these cases from two standpoints. First in regard to the suprapubic cases with the number of deaths which occur between the suprapubic drainage and the prostatectomy. As we look over our lists in New Haven we find quite a number of debilitated individuals who have had a suprapubic drainage and go on for several days or a week to die of sepsis. I believe Dr. Keyes has probably an answer to that problem and it is an answer which seems to me a very feasible one. I am going to try his operation for some of these very sick individuals.

The second point is illustrated by work which we have all done on serious cases where we have rapidly opened the bladder in thin individuals, probably not opening the perivesical space or the space of Retzius and at a later date we go in and very rapidly through the sinus without enlarging it remove the prostate without any or little inconvenience to that patient. That seems to me to be an example which we have all experienced and probably proves to us conclusively that Dr. Keyes' idea with regard to this surgery is correct.

There is another point in respect to infections in these cases which has caused us to give considerable attention, namely, in those individuals who have a large residual and who are catheterized at home—the typical picture of which is often described by the individual carrying the catheter in his pocket, taking it out, spitting on it and catheterizing himself without apparent sepsis. We have always applied such theory of immunology to those individuals as being explicable on the ground that the vitality of these organisms must be very low. I do not believe that. For the last two or three years we have treated cases with large residual without infection by catheterization daily. The bladder was completely drained, thoroughly irrigated, instillation of 0.5% mercurochrome—10 cc. was given and the patient sent home. We have not had the slightest difficulty in sending these people home and having them come back daily for seven to ten days for complete emptying of the bladder. We then admit them and treat them with an indwelling catheter. This is contrary to some of our teachings and some of our textbook morals. I believe it is the activity of the individual that enables the man to gain his resistance to that infection. Take an individual and put him in bed and he gets very little activity. Certainly the question of infection and environment of the patient is of extreme importance. I wish to thank Dr. Keyes for his very enlightening discussion with respect to this timely subject.

Dr. Barney: I am very much interested in what Dr. Keyes had to say about this subject. I have lost, just as we all have lost, patients between suprapubic cystotomy and prostatectomy. I do not doubt that some of these have died of the sepsis which Dr. Keyes' operation prevents, but I must confess that I have to agree with Dr. Chute and more or less disagree with Dr. Keyes that sepsis from that source is a very infrequent thing. I think I shall put into practice some of Dr. Keyes' teachings. I think they are worth while and extremely interesting. We are learning all the time and now that Dr. Keyes has opened this subject I think we can perhaps make progress where we have not made progress before.

Dr. A. H. Crosbie: I have enjoyed Dr. Keyes' talk, as I always do. I am rather inclined to agree with Dr. Chute. I have never had any very serious trouble with prevesical sepsis. Following his teaching, I always drain very freely, put rubber wicks down in below the tube and above the bladder tube. If I have a patient with a large residual I am always rather in a hurry to get that drained and I do not see any great object in waiting and draining the prevesical space. I am rather inclined to open the bladder and drain that and at the same time give adequate drainage to the prevesical space.

I agree with Dr. Keyes entirely about the danger of infecting the prostate with catheter drainage. That is one objection I have to catheter drainage, that there is great danger of prostatic inflammation following either intermittent catheterization or an indwelling catheter, so I lean naturally toward a suprapubic drainage. He may convince us in time that it is necessary to drain the prevesical space first, but, as I say,

it always seems to me very important to get adequate bladder drainage. However, it is only by discussing these things that we are going to learn and I certainly have enjoyed hearing his paper.

DR. KEEFE, Providence: I believe that Dr. Keyes has given us some sound surgical advice. Sometimes men who are concentrating on a specialty omit some very important surgical principles and as far back as the time when Pilcher first spoke of the two-stage operation for prostatectomy I thought he was on the right track. Dr. Keyes has given us a very accurate method of preventing infection by his two-stage method of entering the bladder. I know we can do it oftentimes in one stage and get away with it, if it is done accurately, but I can see readily that performing an operation such as he does adds to the security. I have been averse to catheterization and indwelling catheters. I believe it is much safer to do a suprapubic operation and I am convinced that Dr. Keyes' method is a very desirable one.

DR. J. H. CUNNINGHAM: Regardless of what Dr. Keyes talks about, it is always a pleasure to hear him. I wish I could come to his side of the question a little more than my convictions will permit. Viewing the matter of prostatectomy, as I have seen it during the past twenty odd years, it seems to me that there have been three constant bugbears — uremia, hemorrhage, and infection. Hemorrhage we have satisfactorily mastered and it no longer needs to interest us very much. Uremia remains of the greatest importance, and I personally have come to consider infection confined to the bladder of relatively little annoyance. The great majority of my prostatic patients, as well as those with bladder tumors or stones, have pretty well infected bladders when I first see them and they have had the infection over a considerable period of time. I have come to regard this infection as part of the bladder pathology and seldom of serious moment. I believe that the technique of opening an infected bladder is of great importance and we make every effort to render the bladder as clean as possible before operation. Of course, one realizes that a pelvic cellulitis is possible, but I believe a technique that is not too dissecting in character prevents it sufficiently if proper drainage is employed. To get a patient to accept three operations in the performance of suprapubic prostatectomy, as advised by Dr. Keyes, requires a particular charm that many of us do not possess. That his idea is applicable to a very small group of cases is possible, but as a routine procedure I question it. I shall await further statistical data in regard to the matter with greatest interest.

DR. WILLIAM C. QUINBY: As many of you know, I have tried for a number of years, by any method which seemed safe, to shorten the hospital career of prostatic patients and while I entirely agree with the position of Dr. Keyes in avoidance of sepsis, I must say that I have broken all the tenets which he advises quite constantly, and I fail to see that I have done any special harm. I cannot recall any patient who has had an osteomyelitis of the symphysis pubis or anything of that sort. In each case, so far as possible, I have avoided a two-stage operation. It is not always possible but at least two-thirds of the patients are operated on by a one-stage prostatectomy and so operated that the entire prevesical area is widely exposed. The incision in the anterior wall of the bladder extends, as a rule, from well above the peritoneal reflection down to within possibly half an inch of the beginning of the hypertrophied prostate, when the prostate is removed by the suprapubic operation.

I have been trying to imagine why we have not had more difficulty from sepsis and feel that it may be due to the fact that there is no soiling in the method by which the bladder has been opened. I have practically always exposed the blister of mucosa of which Dr. Keyes speaks; again without the logic which he has used. It happens to have been my method of dissecting the bladder wall, holding it up with tenacula and exposing this blister of mucosa, then plunging a tube into the bladder, which tube has a negative pressure in it so that there is almost no soiling by bladder contents of the wide exposure of the wound. That may have had some influence on the good results which have been our usual experience. I think that these results may be due more to good fortune than to logic. Nevertheless, in my cases it has been possible to expose all the area, getting a good wide access to the prostate and enucleating it in one stage; in many instances with rather brilliant results. Certainly the postoperative convalescence is much diminished in time and discomfort by this method.

DR. EDWARD L. KEYES: I have been asked about dribbling after suprapubic prostatectomies. Those of you who do the operation will agree that it is not one of our major difficulties. A very few of my patients have had more or less incontinence of urine for a brief period following operation. It is so exceptional, however, that I do not consider it as part of the game. The dribbling is, of course, the privilege of the perineal "prostatectomist".

I seem not to have made myself clear to Dr. Cunningham and Dr. Crosbie. I am no longer using the magnificent three-stage operation as a preliminary to prostatectomy. It has elucidated things to me that were not clear before —separating pelvic from urethral infection in my mind. I am now doing the two-stage prostatectomy which so many of you do, the first

stage done with a vasotomy as nearly as possible practically at the moment the patient enters the hospital and discarding the inlying catheter as a therapeutic agent. One of the items that first moved me was a paper I read that had an enormous series of cases reported from the Mayo Clinic. They stated quite definitely that they did one-stage prostatectomies only on their most promising cases and did two-stage prostatectomies on their less promising cases. But a critic pointed out that the two series showed about an equal mortality so that the one-stage prostatectomies were therefore doing as much harm to the good cases as the two-stage were doing to the bad ones.

The technique that I have suggested happens to be the one I am using at the moment. I mentioned it merely because I know you like to hear what people are doing, but my thesis was a thesis in the abstract of trying, by whatever method you please, to keep the suprapubic wound clean and to keep from bruising the prostate and adding its infection to the trouble the patient already has.

I think that the striking difference between the histories of tabetics and those of prostatics under catheter is due to the fact that the tabetic usually has no enlargement of his prostate and of course has a wide-open bladder sphincter so that he introduces his catheter without trauma to the prostate and therefore merely by taking urotropin can keep himself entirely clean which the prostatic cannot do. I have done a number of one-stage prostatectomies and shall perhaps do more in the future, but I keep clearly in my mind the objective of making the whole procedure aseptic as far as surgery can make it so, in spite of the fact that so much infection hovers about.

I would recommend that you go over your cases and note the rise in temperature which follows suprapubic drainage by the usual methods and then try by some such system as I have employed to be extra-clean. I have found that it reduces the range of temperature and considerably diminishes the average time between drainage and prostatectomy (from ten to fourteen days down to four to six days).

DUST

Dust can never be for very long out of our thoughts or our eyes. The air is never free from it. Volcanic dust has been found thousands of miles from its source. Polien from Alaska has been carried far into this country. To the housewife, dust is a continual problem.

From the point of view of health, dust is also very important, especially in its effect on industrial workers. In some cases dust created in manufacturing processes is definitely poisonous, even in small amounts. For instance, lead dust in storage battery plants, potteries, and other industries. There are also other poisonous dusts.

It is desired to call attention to another aspect of dust in its relation to health—the breathing in by the worker of large amounts of fine particles, not in themselves poisonous.

If the dust is of sufficient fineness (much too small to see with the naked eye), some of it will get into the lungs. Dust containing free silica or quartz has been found to have a very injurious effect if present in sufficient quantities, producing silicosis, a fibrosis of the lungs which predisposes to a fatal form of tuberculosis. Many dusts also cause minor upper respiratory diseases, and in some cases skin affections. Workmen employed in the dusty trades comprise the largest group exposed to any particular industrial hazard.

The body can protect itself from a good deal of dust. Small hairs which line the nasal passages and specialized cells of the bronchial tubes intercept some of the particles of dust before they reach the lungs. But as much as 13 grams of silica rock dust were found in the lungs of a miner who died from silicosis.

In the various industries, all kinds of dust are encountered. Organic dusts, such as animal and vegetable fibers are found in the textile trades, in flour milling, in sawmills, and in other industries. Inorganic dusts, which include calcium, silica, and other mineral dusts, are found in various grinding processes, in granite-cutting, in mines, or in cement making, and in many other industries.

The harmful effect on the body of breathing large amounts of dust depends on the character of the dust, the amount to which the worker is exposed, and the length of time he has been breathing the dust. In order to obtain more definite information in regard to these three points, the United States Public Health Service has made a series of investigations, each dealing with a different type of dust.

In these studies, the cause and severity of disabling illness among the workers have been observed over a period of time, from one to three years; careful physical examinations have been made, x-rays of the lungs have been obtained wherever possible, and careful determinations have been made as to the amount and kind of dust present.

Six kinds of dust have been studied: Calcium dust in a Portland cement plant; silica dust in granite-cutting plants; carbon dust in coal mines; vegetable dust in a cotton manufacturing plant; metal and other dusts in a silver polishing plant; and municipal dust to which street sweepers are exposed. —*United States Public Health Service.*

MENINGOCOCCIC MENINGITIS— REPORT OF A YEAR OF CONSULTATIVE SERVICE*

BY R. CANNON ELEY, M.D.†

DURING the past few years there has been a gradual increase in the incidence of meningococcus meningitis in this country, and associated with this increase, epidemics have occurred in at least three sections, namely, California in 1928, Detroit in 1928-29 and 1930, and Indianapolis in 1930. Realizing that this disease is becoming more prevalent, it at once becomes obvious that special care must be exercised in the early diagnosis and treatment of these cases.

Due to the increased incidence of this disease, and the realization that it may, and frequently does, manifest itself in a bizarre manner, the Massachusetts Department of Public Health organized on March 1, 1930 an advisory committee‡ on meningococcic meningitis. The purpose of this committee has been twofold: first, to offer to the physicians of the State a diagnostic service in any case suspected of having meningococcus meningitis, and second, to make possible a complete and comprehensive study of the various strains of meningococci, with the incorporation, when necessary, of new ones into the preparation of anti-meningococcus serum. By this method it was hoped that not only would cases be diagnosed and treated at an earlier date, but also that a more potent serum might be made available.

Briefly, the procedure has been as follows: Upon the request of the attending physician, the services of a consultant have been made available to assist in the early diagnosis of those cases suspected of being meningococcus meningitis. Requests for this service have been handled through the State District Health Officer, the State Department of Public Health, or the Children's Hospital.

The patient has been seen in consultation with the attending physician and a lumbar puncture performed when it has seemed to them to be indicated. Anti-meningococcus serum has been administered intraspinously whenever a cloudy spinal fluid has been obtained, further administration of serum being cared for by the attending physician and, so far as possible, based upon the laboratory examination of the spinal fluid. The consultant has assisted the physician in arranging for hospitalization of the patient when necessary, but has not assumed responsibility for further treatment than that at the time of the initial visit. He has, however, advised with the physicians as to complications and subsequent treatment. The service has been designed essentially as an assistance to physicians in the early diagnosis of meningococcus meningitis and is available only upon request of the attending physician.

In view of the fact that acute anterior poliomyelitis not infrequently simulates meningitis, arrangements have been made with the Harvard Infantile Paralysis Commission whereby patients found to be suffering from this disease instead of meningitis may receive the benefit of poliomyelitis serum at that time. By such an arrangement, unnecessary delay in the treatment of this disease is avoided.

The committee has now been functioning for a period of twelve months and a review of the work accomplished, with brief reference to some of the interesting clinical observations, is reported.

The occurrence of more than one case of meningococcus meningitis in the same family is uncommon. In the epidemic in New York in 1904 and 1905 there were only 88 instances among 1,500 cases. Furthermore, it is well recognized that the chief factor in the spread of this disease is the carrier rather than the individual. This is well illustrated by the infrequency of the condition among those who care for these patients, and the absence of a history of such contact in those sick. In this small group there were two instances in which more than one case of infection by this organism were observed in the same family. In one family a boy eight years old complained of slight headache when he retired and a few hours later vomited and complained of general malaise. At this time the mother took the boy into the bed with her, where he remained until morning. About noon there appeared a generalized rash over the boy's body, which gradually became more pronounced as the day passed. When seen that night, the patient presented a petechial rash and signs of meningeal irritation. Lumbar puncture yielded a normal spinal fluid. The patient was then transferred to a hospital where subsequent studies were made. Two days following the onset of the boy's illness, the mother developed a similar rash, accompanied by evidence of meningeal involvement. Lumbar puncture yielded a cloudy spinal fluid from which the meningococcus was recovered. Both patients made a complete recovery. Although the organism was not demonstrated in either the spinal fluid or the blood of the boy, the subsequent course of events warrants the conclusion that this patient had a meningococcus infec-

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tion, as did his mother. In the second instance, four members of the same family developed meningococcus meningitis. One of the patients, the first to develop the disease, died; the other three recovered. The organism was isolated in each of the four cases.

Hemorrhagic manifestations in the skin were noted in six cases. The size of the lesions varied from fine, minute, petechial lesions to large purpuric areas. Although the rash was generalized in its distribution, yet the greatest number of the lesions were found over the points of pressure. As there were variations in their sizes, so were there variations in their color. The fine petechial lesions were usually bright red, while the larger areas were of a deep purple color. There can be little doubt that these lesions are associated with the presence of the organism in the blood stream. Meningococci may be isolated from these lesions and positive blood cultures are more frequently obtained in patients who present this manifestation than in those who do not.

Arthritic involvement occurring during the

TABLE I

Months	Cases Reported to State	Meningococcus Meningitis Cases Seen	Other Cases Seen	Total Calls Made	Diagnoses of Cases Other Than Meningococcus Meningitis
1930					
March	24	3	7	10	Pneumonia, 2; streptococcus meningitis and mastoiditis, 1; encephalitis, 2; tuberculosis meningitis, 1; meningococcemia, 1.
April	18	3	2	5	Cerebral apoplexy, 1; pneumococcus meningitis, 1.
May	33	1	2	3	? syphilitic meningitis, 1; endocarditis with emboli, 1.
June	16	0	1	1	Streptococcus meningitis, 1.
July	4	0	1	1	Tetanus, 1.
August	10	1	2	3	Encephalitis, 1; meningismus with sore throat, 1.
September	8	2	4	6	Poliomyelitis, 2; concussion, 1; cerebral apoplexy, 1.
October	7	0	2	2	Pneumonia, 1; streptococcus throat infection, 1.
November	6	1	3	4	Cerebral apoplexy, 1; poliomyelitis, 1; encephalitis, 1.
December	11	0	4	4	Encephalitis, 1; pneumonia, 1; cervical adenitis, 1; spinal epidural abscess, 1.
1931					
January	10	0	1	1	Tuberculous meningitis, 1.
February	5	1	1	2	Encephalitis, 1.
	152	12	30	42	

TABLE II

TABULATION OF DISEASES

Disease	Number of Cases
Meningococcus Meningitis	12
Meningococcemia	1
Streptococcus Meningitis	2
Tuberculous Meningitis	2
Pneumococcus Meningitis	1
Syphilitic Meningitis	1
Encephalitis	6
Acute Anterior Poliomyelitis	3
Cerebral Apoplexy	3
Tetanus	1
Streptococcus Throat—Meningism	2
Concussion	1
Pneumonia	4
Cervical Adenitis	1
Epidural Abscess—Spinal	1
Endocarditis with Emboli	1

TABLE III

DEATHS IN THIS SERIES

Disease	Number
Cerebral Apoplexy	2
Meningococcus Meningitis	3
Pneumococcus Meningitis	1
Tuberculous Meningitis	2
Tetanus	1
Endocarditis	1
Total	10

TABLE IV

MENINGOCOCCUS INFECTIONS

Manifestations	Number
Meningococcemia without Meningitis	1
Meningitis	12
Meningitis—More than 1 case in family	2
" Arthritic	2
" Petechial Rashes	6

acute stage of the disease and prior to the introduction of serum, was noted in two patients. In one, the arthritic manifestations so simulated those seen in acute rheumatic fever, that a diagnosis of such had been made. However, after two or three days of illness, the patient developed typical signs of meningitis and a lumbar puncture yielded a cloudy fluid from which meningococci were easily obtained. In the second patient, the involvement was confined to both wrists, which became red, swollen and hot. The condition subsided on about the fourth or fifth day after its appearance. Both of these patients made a good recovery.

The successful treatment of meningococcus meningitis is directly dependent upon its early recognition and the institution of serum therapy. It is a disease for which we have a specific form of therapy, and it is just as important to give anti-meningococcus serum at an early date in this disease as it is to administer diphtheria antitoxin in diphtheria. However, the diagnosis is often most difficult to make, as the early signs and symptoms are frequently far from classical. In no other form of meningitis are they so varied as in this type.

Except in times of war, when large numbers of adults are crowded together in unhygienic conditions, meningococcus meningitis is primarily a disease of infancy and childhood. Yet, the classical signs of this disease are usually absent in infants and children during that period when serum therapy is so important. McKhann[1] has pointed out that the most common symptoms during this period are those referable to the gastro-intestinal tract rather than to the central nervous system, and he suggests that the present high mortality rate of cases treated in institutions may be due to the delay in diagnosis dependent upon the development of meningeal signs. In McKhann's series of seventy-four cases, there was a mortality rate of 43 per cent. In infants under one year of age the mortality rate was 64 per cent.; from 1-2 years, 30 per cent.; and from 2-12 years, 24 per cent. The significance of these figures is obvious, and their meaning is even more disturbing when one realizes that of the group under 2 years of age, 48 per cent. had been sick over two weeks and 23 per cent. had been sick over four weeks before the diagnosis of meningitis was made. The mortality rate is 20-30 per cent., if the disease is treated within four or five days after the onset, but 75-100 per cent., if treated after this time has elapsed.

A further review of McKhann's figures showed that the mortality rate of infants under 2 years of age was 82 per cent. in contrast to a mortality rate of 24 per cent. in the group between 2-12 years. The explanation of this marked difference becomes apparent when one realizes that the manifestations of meningeal irritation are rarely present in infants during that period when serum is most effectual whereas in older children meningeal signs appear at an earlier date. Hence the diagnosis is more quickly established. This variation in the early clinical manifestations probably lies in the anatomical structure of the head of an infant as compared with that of a child. In the former the sutures are not ossified and the fontanel is open, while in the latter these conditions do not exist. On account of this expansile ability, increased intracranial pressure in the infant manifests itself at a later date than in the child whose cranial vault is rigid and non-expansile. Therefore, the earliest evidence of the disease in an infant is that of infection, whereas in the child it is that of increased intracranial pressure.

The present high mortality rate of this disease will be reduced, if one considers this difference and suspects meningitis in all infants whose illness is not satisfactorily explained. It is only by considering the disease that we can diagnose it. There are pitifully few diseases for which we have a specific form of therapy, and yet here is one in which our delay in diagnosis only too frequently precludes the advantages to be gained by the use of a specific serum.

If serum therapy is to be effective, the disease must be suspected and diagnosis made in the early stages before convulsions, paralysis, hydrocephalus or other complications have developed. Meningococcus meningitis should be considered in the differential diagnosis of any unexplained illness and excluded at an early date.

REFERENCE

1 McKhann, Chas. F.: Meningococcus Meningitis in Infants. New England Jour. Med., March 13, 1930, 202:520-523.

ONCHOCERCA INVESTIGATIONS IN GUATEMALA

Report of Progress of the Harvard Expedition*

BY RICHARD P. STRONG, M.D.†

AFTER carrying on investigations upon Onchocerciasis in Africa, it seemed desirable to continue further studies upon a similar disease in Guatemala. Up to the present, most of our studies have been pursued at the coffee plantation of Santa Emilia near Pacayal and they are being continued now at Mocá. At Santa Emilia, about 54% of the inhabitants were infected with *Onchocerca caecutiens* Brumpt, and in both these localities *Filaria bancrofti*, *Loa loa*,

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and *Acanthocheilonema perstans* are not found.

While the nodular tumors of *O. volvulus* in Africa are situated almost invariably upon the trunk or extremities, in Guatemala those of *O. caecutiens* occur, with few exceptions, upon the head, usually in the region of the scalp. The tumors in Guatemala are as a rule somewhat smaller than those seen in Africa, many not measuring over 6 to 20 mm. in diameter. They in this respect resemble rather the nodules caused by *O. gibsoni* in cattle. The classes of individuals among which infection occurs in Guatemala do not show any tendency to keloid formation, as is often the case in Africa. Nevertheless, in rarer instances the nodular tumors in Guatemala reach 2 to 3 cm. in diameter. In one instance in Guatemala, in which a filarial tumor was observed upon the body 1 cm. posterior to the anterior superior spine of the pelvis and lying in the subcutaneous tissue, it measured on removal 5 cm. in its greatest length.

The tumors are enclosed in a fibrous capsule and contain in the central portions the adult filarial parasites and numerous microfilariae. In some cases they are lentil-shaped and lie in shallow depressions on the surface of the skull, the periosteum either being adherent to or fused with the inferior surface of the cyst wall. In other instances the periosteum has apparently become absorbed. In one instance, a small tumor, about 3 mm. in diameter, was found in a shallow cavity in the cranium, about 3 to 4 mm. wide and 2 to 3 mm. in depth, the bone being exposed.

The adult parasites, both male and female, have been separated from the tumors and obtained entire, particularly by digesting the tumors in different ways, especially with fresh papaya juice or with papaine in 0.2% hydrochloric acid. The males commonly measure from 2.5 to 3 cm., and the females from 30 to 44 cm. in length. We prefer to refrain from discussing the relationship of *Onchocerca volvulus* Leuckart (1893) to *O. caecutiens* Brumpt (1919) until all our *O. caecutiens* material has been compared with that relating to *O. volvulus*. The developmental forms of *O. caecutiens*, as observed by us in Eusimulium, are on the whole of greater dimensions than those that have been observed in the case of *O. volvulus* in *E. damnosum*.

Among adults who gave a history of the existence of tumors for five years or longer, poorness of vision is frequently complained of and a number are almost blind. Many of the advanced cases suffer with photophobia and show a pericorneal infiltration of the conjunctiva, with extensive keratitis and iritis. The iritis is usually secondary to the changes in the cornea. The lesions which occur in the eyes as a result of the filarial infection are apparently chronic in character. The microscopical examination of sections of eyes removed at autopsy and at operation suggests that the lesions of the eye are at least partly due to the continued passage of large numbers of microfilariae through the lymphatic vessels of the eye and to the dilatation and oedematous condition and perivascular infiltration which result. The microfilariae of *O. caecutiens* evidently seek especially the light and the lymphatic tissues of the eye. We have found them in individuals with poor vision, in sections of the pericorneal conjunctiva, cornea and iris (obtained at operation) and in greater numbers than in the skin. Whether some of the disturbances of the eyes are due to a toxin produced by the parasite is not clear.

The blood almost always shows evidence of an eosinophilia; counts varying from 25 to 50% are usual. We have so far carried on investigations upon 131 cases of infection, in which studies have been made of the sections of the skin or of flies which have fed upon them or of the blood and serum, and sixty of the tumors have been removed. Portions of these tumors have been hardened in Zenker's solution for histological study, while others have been used for the preparation of antigen and still others have been digested or dissected to obtain the adult parasites.

The microfilariae of *O. caecutiens* which are found present in the sections of the epidermis are actively motile and measure from 150 to 250 μ, rarely from 285 to 300 μ in length and from 6 to 7 μ in width. They are not found naturally in the blood. When, as might rarely happen, one has been seen in a preparation of the blood, it has evidently come from a lymphatic vessel punctured in obtaining the specimen. If a thin section of the epidermis of the face or neck of an infected individual is made (preferably with a safety razor blade), without causing any flow of blood, and is examined fresh in a drop of normal saline solution, one or two motile microfilariae, up to 4 to 8 are often found. However, the microfilariae are not invariably encountered by this procedure in the examination of one or two sections of the skin. If, however, a Eusimulium fly (one of three species discussed below) is allowed to bite on the face of an infected individual, there are found on examination of the blood in the abdomen many more microfilariae than are encountered in the direct examination of the skin. But, in a case where a previous examination of a section of the skin of the face has shown no microfilariae, if a second section is made through or very near the spot where a fly has just bitten, very large numbers of microfilariae (over a hundred) may be found in it. Very clearly the fly usually produces in some way during feeding a concentration of the microfilariae about the point of the bite, many of which it imbibes. Either by examination of a skin section or especially of a fly which has bitten an infected person, may the presence of microfilariae be demonstrated

in the skin of all parts of the body of some cases (even as remote from the tumor as the feet and toes). They, however, are always found in smaller numbers in the skin as one leaves the head and they are especially numerous in the skin of the face and neck.

We have been able to show that three species of Eusimulium, which we found to be common during February and March in the coffee-growing districts, are concerned in the transmission of the disease in Guatemala. For the present, and until careful comparison has been made by our entomologist with published descriptions and museum specimens, these species have been designated as follows: Species A (probably *Eusimulium avidum* Hoffmann), a small black fly, some 2 mm. in length; Species B (probably *Eusimulium ochraceum* Walker), about the same size or a little smaller, with yellow thorax, the abdomen half yellow and half black, and the legs mostly black; and Species C (probably *Eusimulium mooseri* Dampf), slightly larger than the foregoing, with the thorax and most of the abdomen yellow and the legs very extensively yellow. In addition to these, two larger species of Simulium have been encountered in the same districts, but neither of these have thus far been observed biting man. All these species breed abundantly in the swiftly flowing mountain brooks and streams, the larvae and pupae being attached particularly to the leaves and stems of plants (especially floating grasses) growing or immersed in the running water. From pupae placed in an improvised trap or cage over running water adults of both sexes have been bred of four of the five species of flies mentioned above.

When a Eusimulium of the Species A, B or C is allowed to engorge itself (which usually requires from 3 to 5 minutes) upon a suitable infected individual, the microfilariae, from some dozen up to several hundred, are practically always found in the gut of the fly shortly after it has fed. The microfilariae in the gut, which are not digested or otherwise killed, pass from the gut shortly afterwards to other parts of the fly, particularly to other parts of the abdomen and to the thoracic muscles, where they may be found in the tissues in numbers from one or two to several hundred, from 24 to 48 hours after the infective meal of the fly. The microfilariae observed in the abdomen of the fly are actively motile and exhibit frequently more marked activity than they do in the sections of the skin. They measure usually from 200 to 300 μ in length and from 5 to 8 μ in breadth. The conditions which the microfilariae find in the thoracic muscles evidently cause marked changes in their development. At first they usually increase slightly in length. However, within a few days, varying probably somewhat according to temperature, they become very much broader, from 22 to 25 μ in breadth, or even wider, but without corresponding or great increase in length. Indeed some of the forms appear shorter. At this stage the broader forms show very decided changes in the caudal appendage, which is no longer tapering, but has become transformed into a short pointed tail. Definite indications of the development of the alimentary tract are also visible, which has become developed into two distinct sections following a rudimentary esophagus. Two caudal papillae can also be distinguished in some. These forms, which correspond roughly to those that have been described in the development of *Filaria bancrofti* in the mosquito as torpedo or sausage forms, measure most usually when extruded from or found in the thoracic muscles of Eusimulium, from 200 to 555 μ in length and from 22 to 45 μ in width. A single one measured only 165 μ by 15 μ. Another striking change from the microfilarial stage noted in these thoracic forms is in their movements. They no longer squirm about and do not as a rule exhibit marked active motility nor do they progress suddenly from place to place. Instead they bend gently and slowly at various parts of the body. They sometimes seem to slip or glide out of the thoracic muscles, particularly when the dissection of the fly is made in normal saline solution.

In the course of several days another striking change is noted in the further development of these broader types. These more advanced forms are encountered in the thoracic muscles, in the head and proboscis, and sometimes in the upper portion of the abdomen, particularly about and closely applied to or within the Malpighian tubes. These forms are longer and more slender and more filarial in type. They are endowed with very active movements and with considerable strength of movement, as is indicated by the way they move the tissues about with which they come in contact. Such forms measure from 450 to 1140 μ in length and usually from 16 to 25 μ in breadth. Only two forms measured as much as 30 μ in their greatest breadth. The alimentary canal of these forms has become much more developed and may be seen to extend from the anterior end to the narrow slit-like anus on the side near the tip of the tail. The caudal papillae, which became first visible in the broader forms, also show further development and the rudimentary indications of the genital and nervous systems are visible in some of the more advanced forms. Noteworthy anatomical differentiation of the developmental forms can particularly be distinguished by the staining reactions of the preserved specimens which were first hardened in hot 70% alcohol and later stained in Giemsa solution or haematoxylin. These will be fully described and illustrated in the complete report of the work in Guatemala.

We have encountered in our studies of *Oncho-*

cerca caecutiens in Eusimulium in Guatemala forms which we did not encounter in the study of *O. volvulus* in *E. damnosum* in Africa in 1926 and which have not previously been described. However, we did not have the extensive material to work with in Liberia that we have had in Guatemala. Blacklock, who first described the development of *O. volvulus* in *E. damnosum* in Africa, in 1925 and 1926, who alone (besides ourselves) has published upon the development of this African parasite, gives the measurements of the most advanced filarial forms in casual flies as 560 to 660 μ in length and 18 to 28 μ in breadth, and in flies which had fed on a known infected case as 349 to 628 μ in length and 20 to 38 μ in width. In his second communication on the subject he mentions "the longest form which he obtained as attaining the length of over 760 μ."

In the dissection and microscopical examination of 2088 Eusimulium flies caught in Guatemala, 233, or some 11% have been found to harbor some form of *Onchocerca caecutiens.* However, in 430 instances the flies were taken for study while feeding upon individuals known to have onchocercal tumors. Of 1658 simuliid flies that were captured at random about the villages, 89, or about 5% were found infected with the parasite. All stages of development of *O. caecutiens* have been repeatedly observed in Eusimulium, from the time of the ingestion of the microfilariae from the skin of the infected individual up to the fully developed infective filarial form in the thoracic muscles, head and proboscis. In three instances we have been fortunate enough to secure preserved specimens of the infective form passing through and emerging from the labium of the proboscis.

It was our intention to study the relationship of all biting insects in the community to the transmission of *O. caecutiens,* but almost no other blood-sucking insects, with the exception of a few anopheline mosquitoes, were encountered about Santa Emilia, where our work was begun. More recently, at Mocá, we have been able to perform experiments with a Culicine mosquito, to see whether it became infected when fed on cases of Onchocerciasis, but with negative results. The Eusimulium flies in these regions, with the exception of the filarial infections, are generally not parasitized. A few protozoan infections have been noted. These and several other casual infections noted in several flies will be referred to in the later report.

The question naturally arises of whether any tolerance or immunity develops in the course of time in the infected individuals and why the great majority do not have a greater number of tumors than one or two, since many are daily exposed to fresh infection by the bites of Eusimulium. Attempts have been made to ascertain if hypersensitive reactions were to be obtained with an antigen prepared either from the adult parasites or from the tumors containing the adult parasites and enormous numbers of ova and microfilariae. It is true that the injection of 4 minims of such an antigen into the skin caused in a number of the infected cases the development within 15 minutes of a wheal which was more marked than in the other arm where a similar control injection was made; but the wheal disappeared within half an hour and did not reappear. On the other hand, the blood serum of many of the cases with a history of having had the tumor for more than several years, gives a distinct precipitin reaction with an antigen prepared from the tumors; the general technique of the Kahn test being employed.

Certain public health procedures are of importance for the eradication of the disease. The conditions under which Onchocerciasis occurs in Guatemala are widely different from those under which it prevails in Africa. In Guatemala it is confined to rather sharply circumscribed areas, especially about coffee plantations with an altitude of from 600 to 1400 meters. As the breeding places of the Eusimulium concerned in the transmission of the disease are so widely distributed in practically every running stream of water in the neighborhood, the eradication of these flies in such coffee districts is entirely impracticable.

Every severely infected case constitutes a focus of infection. Many individuals are so badly infected that every Eusimulium fly which bites them is likely to ingest a hundred or more microfilariae, while in a mildly infected case a fly may not take up more than one or two microfilariae. Public health procedure should include inspection of the inhabitants in the endemic districts and the diagnosis of the cases with filarial tumors with prompt removal of the fibroid growths. The operations are simple and easily performed under local novocaine anesthesia. In case of an individual refusing to be operated upon, he should be isolated and not allowed to reside in a region where the Eusimulium concerned in the transmission prevail. Since the microfilariae do not disappear immediately following the operation, but often persist for a considerable time thereafter (and in cases with no further detectable tumors), periodic microscopical examinations should be made after operation to detect the number of microfilariae which persist. If large numbers of microfilariae are still present, the individual should be regarded as a dangerous carrier and be isolated until the parasites diminish or disappear.

The Harvard Expedition to Guatemala consists of Dr. Joseph C. Bequaert, Assistant Professor of Entomology at the Department of Tropical Medicine of Harvard University, Dr. Miguel Muñoz Ochoa, Chief of the Parasitological Division of the Department of Public Health of Guatemala, and Mr. B. Bennett, a Technician

of the Department of Tropical Medicine, besides the writer. The entomological side of the work will be fully described by Dr. Bequaert in the complete report, which will also contain the epidemiological data by Dr. Ochoa. Acknowledgments of assistance and courtesy, as well as references to the literature, will likewise be given in the final report.

Plantation Mocá, Guatalon, Guatemala.
March 30, 1931.

THE BAKER MEMORIAL OF THE MASSACHUSETTS GENERAL HOSPITAL

A Ten Months' Demonstration in the Hospital Care of People of Moderate Means

BY FREDERIC A. WASHBURN, M.D.*

THE Trustees of the Massachusetts General Hospital were convinced of the necessity of making provision for the hospital care of people of moderate means as long ago as the year 1914. In their annual reports for a number of years this subject received consideration and an appeal was made for money for this purpose. From the estate of Mrs. Mary Rich Richardson was received, in 1925, the sum of one million dollars to erect, in memory of her father and mother, Richard Baker, Jr., and Ellen Maria Baker, a building for the use of patients of moderate means. Building costs had increased materially and ideas of the size of the unit needed to do the work efficiently and economically had also grown so that this sum was inadequate. A public appeal was made, which brought in about nine hundred thousand dollars more. The building was then erected and the first patient was admitted March 3, 1930.

Until quite recent years hospitals cared for the poor only. Until 1917 the Massachusetts General Hospital consisted of wards in which the patients paid such small sums as they could for their board and many, perhaps fifty per cent., made no payment whatever. The services of the professional staff were entirely gratuitous. The reward of the staff was in the rich experience which its members gained, the opportunities for teaching and the prestige of connection with a famous institution. These emoluments, though indirect, were substantial and well worth while. The hospital still preserves jealously the traditional custom that no professional fees shall be paid by patients in the general wards. With the advance in medical science and the necessity of concentration upon the care of the hospital patient, teaching and research, a number of the staff are now on approximately a full time basis. They are paid by the hospital and Harvard Medical School. There is still a large unpaid staff working with this nucleus of salaried men. In 1917 the Phillips House was built for people able to pay the hospital something more than cost and the doctor a good fee for his services. The poor were then receiving the best of hospital care, the needs of the well-to-do were met, but nothing was being done for the largest group of all, the people of moderate means.

The argument that something should be done for this group was a strong one. They were unable to pay the full charges of hospital, doctors and nurses in the private wing, which, with us, is the Phillips House. They could not be admitted to the charity wards for they were able to pay something to the physician. The result was that when sick, they were many times compelled to be cared for at home, where the cost was very considerable and their chances for correct diagnosis and treatment were much poorer than at the hospital. If they went to the private ward, they were obliged to contract a debt, perhaps a heavy one. They were sometimes driven into the charitable wards, with the consequent loss of their independence.

From this great need came forth the plan which has been adopted at the Massachusetts General Hospital. It was recognized that a great hospital should be prepared to care for its share of the sick of all the community; that access to the benefits provided by a professional staff expert in all the different branches of medicine, to laboratories headed by men who are authorities in their own lines, to the services of nurses, graduates and pupils of a modern training school in a hospital competently administered should be provided for people of moderate means as well as for the poor and the rich.

It is essential that the hospital per capita cost of the Baker Memorial should be kept low. With that object in view the money to build and equip the building was given and no account of interest upon this large sum of approximately $1,900,000, or depreciation upon the building, is to be taken in reckoning the rates to charge patients. The Baker Memorial unit is a large one. It has an eventual capacity of 330 beds. There were two reasons for this considerable size; one was to distribute the overhead expenses broadly to diminish the per capita cost; the other reason was that for a hospital which has 420 beds for the poor and 109 beds for the well-to-do, it seemed important to have a large unit for the great group of people of moderate means.

It was determined, also, to save for the patients the cost of unnecessary special nursing.

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The nursing is done partly by graduates and partly by pupils in the training school. They are relieved of their non-nursing duties by floor secretaries and nurse helpers and maids. The nursing care given is entirely adequate for all patients who do not require constant attendance. In no case are special nurses allowed because of the whim of the patient; the necessity for them must be evident to the patient's physician and to the administration. The bill for special nurses is a large item in the total paid by the patient when ill, either at home or in a private hospital. The elimination of this charge in the great majority of cases and the furnishing of adequate nursing, the cost of which is included in the charge for board, is a most important feature in the plan.

The total bill to the patient is the factor of importance to him. It does him no good to keep the hospital bill low if what is saved him there is added to the physician's bill for professional services. The Massachusetts General Hospital is blessed with a medical and surgical staff which is public spirited and desires to coöperate with the hospital in any progressive movement for the good of the community. Of its own volition the staff has agreed to accept at the Baker Memorial a small regulated fee for its professional services. The maximum amount which can be charged to any one patient for these services is one hundred and fifty dollars, no matter how difficult the case may be or how long the patient stays in the hospital. The charge is graded down from this sum to the vanishing point, according to a schedule which has been agreed upon between staff and hospital.

The staff having met the hospital half way in this matter, it was incumbent upon the latter to be fair in every way to the staff and to see that their rights were protected. It was essential, therefore, to see to it that patients were not admitted who could afford to go to the private hospital. This has been done by obtaining a statement from prospective patients as to their income and their obligations in the way of dependents and otherwise. The answers to these inquiries, together with a knowledge of the probable medical future of the patient, determine whether he should be admitted. After all, doctors' fees have always been graded by the ability of the patient to pay as well as by the difficulty of the service rendered and the time consumed. When talking of this matter with a surgeon from another city recently, he said, "Why should I lessen my fee for the butcher, the baker or the candlestick maker; he makes no reduction in his charges to me?" The speaker forgot that the reason that physicians and surgeons have given for charging considerable fees to the rich is that they give so much of their time and services to those who can pay them little or nothing. So this scheme of ours is entirely just to the profession, provided the hospital is careful not to admit those as patients who do not belong to this group of people of moderate means. To relieve the surgeon of expense and trouble, the hospital supplies the surgical instruments and furnishes the etherizer, resident surgeons, house officers and nurses to assist at the operation. These resident physicians and surgeons and house officers prepare the histories, make physical examinations, and carry out the directions of the staff in the care of patients. The hospital types the records and furnishes the physician with a copy. Finally, the hospital collects the doctor's bill as his agent and turns the money over to him. As the great laboratories, pathological, x-ray, chemical, metabolic, cardiac, and others are all at the disposal of members of the staff who have patients in the Baker Memorial, it is evident how advantageous this plan is for both physician and patient for the best work and the best results.

It has actually turned out to be for the financial benefit of the staff, unexpected as this was, for many patients who were formerly forced into the general wards, where the surgeon or physician could collect no fee, now go to the Baker Memorial, where they pay the doctor a fee, although it may be a small one.

Only the staff of the hospital is allowed to practice in the Baker Memorial. We have, however, a large staff of about 200 active members. Patients coming under the provisions of the Workmen's Compensation Act formerly were admitted to the general wards, where the surgeon received no fee. They are now often admitted to the Baker Memorial and the doctor gets his fee. Great care is taken to return patients to their own physicians when they leave, with a statement of what was found and what was done.

The Baker Memorial has now, January 1, 1931, been open for ten months. It has been necessary to use a considerable part of the building to house nurses and other personnel until other quarters can be provided. This was considered, and so far has proved to be, a safe procedure as it is estimated that it will take several years before the full capacity of the building is needed for patients. There are now 150 beds available for patients. The largest number of patients at any one time during the ten months of operation has been 121. There are interesting statistics of the ten months' operation of the Baker Memorial, some of which I will quote:

March 3, 1930 to December 31, 1930, inclusive

Total number of patients admitted	1,973
Average number of patients per day	87—
Total number patients days	26,315
Total number of patients having special nurses	298
Average time per patient in hospital	13—
Total expenses (excluding special nurses but including special nurses' board)	$252,733.89
Total Receipts (excluding special nurses but including special nurses' board)	188,458.58

Total expenses, including special nurses and board	282,539.19
Total receipts, including special nurses and board	213,884.08
Deficit, including special nurses and board	68,655.11
Total additional receipts from patients for professional fees	109,907.76
Per capita cost per day (not including special nurses but including special nurses' board)	9.60
Per capita receipts per day (not including special nurses but including special nurses' board)	7.16
Per capita charge per day including board, special fees, and special nurses' board (not including special nurses)	7.47
Average amount received per patient for professional fee	55.71
Average amount received per patient for hospital excluding professional fees	94.48
Average amount received per patient including professional fee	150.19
Average amount charged per patient for hospital excluding professional fees	98.65
Average amount charged per patient, professional fee	60.29
Average amount charged per patient including all charges both hospital and doctors' except where special nurse was required	158.94
Average amount charged per patient (298) for special nurses including board of special nurses	121.40

It will be noted that the average amount charged per patient, including all sums due the hospital and all professional fees, was $158.94. Fifteen plus per cent. of the patients needed special nurses. The average amount charged these patients in addition to the $158.94 was $121.40, making a total to these patients of $280.34. This shows in a very graphic way how large a part of the cost to the patient is made up of special nursing. It indicates the great value to this group of patients of adequate floor nursing care and the limitation of special nursing to those patients requiring constant attention. The per capita cost, not including special nurses, was $9.60. The per capita receipts on the same basis was $7.16. As the hospital fills, the per capita receipts should remain about the same but the per capita costs should diminish. It was well recognized that there would be a deficit for the first few years, or until the Baker Memorial is perhaps two-thirds filled. When that occurs, we should break even, a little better than even, financially. The deficit so far is less than we expected. The Julius Rosenwald Fund has agreed to help us in meeting this. They have promised to pay one-half the deficit for three years, up to a contribution of $150,000., not to exceed $75,000. in any one year. We expect to call upon them for about $35,000. the first year.

With the addition of this unit to the General Hospital it is estimated that, by the new distribution of overhead expenses, $2,000. a month now charged to the Baker Memorial would have to be carried by other units of the Massachusetts General Hospital if the Baker Memorial had not been built. There is, therefore, this item of over $20,000. in the ten months' period which can, in a way, be credited against the deficit. If, and when, the Baker Memorial pays its way, not reckoning interest upon the investment or depreciation upon the building, it is proposed to lower the rates to the patients. It is conceivable that money may be given for an endowment of this unit for it has been found that an opportunity to assist those who wish to assist themselves is peculiarly appealing to those who are able and willing to give in a large way. If such good fortune comes to us, that will enable us to reduce our charges to patients.

The hospital charges are:

$6.50 a day for a single room
5.50 " " " " bed in a 2-bedded room
4.50 " " " " " " " 4 " "
4.00 " " " " " " " cubicle

The special charges are:

Operating room fee (including laboratory fee)	$15.00
Laboratory fee	10.00
Delivery room fee (including laboratory fee)	15.00
Anaesthesia	5.00
X-rays (depending on number taken)	$5.00 to 25.00

The patients admitted in the first seven months group as follows:

Professional classes	27+%
Mercantile class	29+%
Artisan	32%
Not known	8+%
Retired	3%

One hundred and fifty-four consecutive admissions were taken. Their incomes or the incomes of the breadwinners of the families were considered. The average income was $2101.74. It would appear that the hospital is helping just the economic group it had in mind to aid.

The Baker Memorial is to a large degree a self-contained unit of the Massachusetts General Hospital. It has its own operating rooms, x-ray, offices and kitchen. It has its affairs presided over by an Assistant Director; its nursing is in charge of an Assistant of the Superintendent of Nurses of the Massachusetts General Hospital; a social worker is assigned to it. These officers and others, such as Resident Physicians and House Officers, find their one task here. In this way we maintain a close touch with patients and friends and keep the valuable assets of a small hospital at the same time that we have the most important advantages of being a part of a great institution.

The advantages to the staff are evident. Now that we have facilities to care for our share of all sections of the community, the staff can concentrate all their hospital work in one place. They can do their work without waste of motion. The hospital furnishes them with every facility for the highest grade of work. They care for their patients where all can see and inferior

work would soon be known and not tolerated. Experience shows that the hospital collects a larger percentage of professional fees than most doctors collect for themselves.

Even under the best of conditions, people of small means will find it difficult to pay for sickness, which frequently comes to the breadwinner himself. Can a system of insurance be devised that will not involve such great risk to the insurer that the rates will be prohibitive? The danger now is chiefly from malingering, perhaps with the connivance of the occasional dishonest doctor. Cannot a scheme be devised on the plan that liability collision insurance is written? These rates, as I understand them, are progressively lower as the insured undertakes to pay the first $100, $200, or $300 himself. The subject of health insurance is an intricate one and beyond the scope of this paper.

The unpaid accounts of the hospital are $11,-218.11—5% of the sum charged. The unpaid doctors' bills are $9,038.74— 8—% of the sum charged. Much of this is good. Some awaits the settlement of estates—some is guaranteed. It should be noted that, as the hospital started *de novo* in March, 1930, there were then no bills receivable so there may be an even better showing of collections in 1931. In a number of instances, when patients were unable to pay the whole bill at once, we have taken their notes—sometimes notes are dated ahead for two or three different periods, so that payment may be made a little at a time. So far we have charged no interest—perhaps we should.

The Baker Memorial has had an auspicious opening. The amount of good which has been accomplished already is great but incalculable. The demonstration is worth watching.

A NEW DYSENTERY-LIKE DISEASE IN THE NORTHWEST MOUNTAINOUS SECTION OF THE UNITED STATES

According to a report recently issued by the U. S. Public Health Service, in various localities of the northwest mountainous section of the United States a mild dysentery-like epidemic has occurred from year to year. The infection has been strictly seasonal, practically all of the cases occurring during the hottest and driest months of the year—July and August. For the past few years, it has been more noticeable in certain of the National Parks where large numbers of tourists assemble during the summer months.

The cardinal symptoms of this disease are nausea, vomiting and diarrhea, and the most striking characteristic is the widespread occurrence of the condition. As far as can be ascertained, at least half of the persons in some of the areas were affected. Many patients did not take to their beds. Frontal headache was a rather common complaint. There were no nosebleeds or sore throats among any of the cases examined. In none of these cases did the physical signs or examination reveal anything definite. Some had a definitely greenish pallor and complained of extreme weakness. There were no particular changes in the blood, except a definite increase in the number of white cells. Throat cultures were taken without yielding any organisms that could be suspected.

Many people attribute the sickness to the pine pollen. Since the height of the epidemic usually comes after August 1, it is unlikely that the pollen was the cause of the affection. Furthermore, some of the pollen was obtained and a small quantity ingested by several persons who had not suffered from the condition, and no ill-effects followed.

This condition resembles symptomatically the food infections caused by the paratyphoid-enteritidis group of organisms. Yet, food infections can nearly always be traced to food spoilage, or some one item of food. The onsets of all such cases, therefore, occur within 12 to 24 hours of one another. This is not the case in these epidemics.

Certain epidemiological characteristics of the disease resemble bacillary dysentery, but the symptoms and duration of the illness simulate certain conditions of food infections. Bacteriological studies of the disease so far have been negative.

HARVARD MEDICAL SCHOOL NEWS

The following fellowships and scholarships for students in the Harvard Medical School for the year 1931-32 were approved by the Corporation on April 13, 1931:

James Jackson Cabot Fellowship to Harry K. U. Beecher.

George Cheyne Shattuck Memorial Fellowship to Jared Y. Garber.

John Ware Memorial Fellowship to Benjamin F. Miller.

Charles Eliot Ware Memorial Fellowship to Fiorindo A. Simeone.

Charles Sedgwick Minot Fellowship to Louis Zetzel.

DeLamar Research Fellowship to Lowell F. Bushnell.

DeLamar Research Fellowship to Benjamin W. Carey, Jr.

DeLamar Research Fellowship to William F. Queen.

DeLamar Research Fellowship to Arnold F. E. Settlage.

DeLamar Research Fellowship to Frederick J. C. Smith.

Stoughton Scholarship to Alfred S. Reinhart.

Buckley Scholarship to Lester S. King.

Rumrill Scholarship to Robert W. Wilkins.

MEDICAL HISTORY

THE DISCOVERY OF CHLOROFORM

THIS year marks the hundredth anniversary of the discovery of chloroform. Three distinguished scientists working independently, one in this country, one in Germany and the third in France, discovered chloroform in the same year—1831. The American was Dr. Samuel Guthrie, one of our pioneer workers in chemistry, whose name appears in a chronological record that has been submitted for use in staging an historical chemistry exhibit at the 1933 Chicago Century of Progress International Exposition.

The chronological record is contained in a report of the chemistry division of the National Research Council Science Advisory Committee to the Century of Progress management recommending plans for the entire series of chemistry exhibits. The chemistry division is made up of twenty-five leading American chemists who have volunteered their services to the 1933 exposition management.

Dr. Guthrie, according to the chemistry division's record, discovered chloroform on October 12, 1831. It is this event that may be commemorated in an exhibit at the Chicago exposition. Dr. Guthrie's name also appears in a roster of about 100 celebrated persons who have contributed to the development of American chemistry during the past century, which is also a part of the chemistry division report.

About the same time that Dr. Guthrie was making the experiments that resulted in the discovery of chloroform, von Liebig, the famous German chemist was working toward the same end, as was also a Frenchman named Eugene Soubeiran. Dr. Guthrie was unaware of the fact that his discovery had been made simultaneously until some time afterward.

Dr. Guthrie's discovery was made in Sacket Harbor, N. Y., while experimenting with bleaching powder, or chloride of lime, and alcohol. He called the product a "spiritous solution of chloric ether". In the same year in which he made his discovery he demonstrated it at Yale, where it received the approval of another noted pioneer in American chemistry, Benjamin Silliman.

The American discoverer of chloroform was born in Brimfield, Massachusetts, in 1782. He was a surgeon in the U. S. Army during the War of 1812. Later he invented the punchlock to replace the old-time flintlock musket. He is also credited in chemistry annals with the origination of a process for converting potato starch into sugar. Dr. Guthrie died in 1848, which was about the time that chloroform was first used as a general anaesthetic.

It was in 1847 that Sir James Y. Simpson, a noted Scotch medical authority began in Edinburgh the practice of using chloroform in maternity cases which later led to its extended use in surgery. Dr. Guthrie was honored by the Medico-chirurgical Society of Edinburgh for his discovery.—*National Research Council,* Science Advisory Committee.

SMALLPOX IN BUFFALO

The *Bulletin of the Buffalo Department of Health Reports* states that Buffalo had more cases of smallpox in February of this year than at any time in the past ten years.

These cases were due to the invasion of the city by people from outside.

Even in well-vaccinated communities the disease is apt to appear when large numbers seek work in a given city.

When will the people of this country establish adequate protective vaccination?

MARINE FOODS CONTAIN MANY DIETARY ESSENTIALS

The *United States Daily* reports that in an address recently given before the District of Columbia Medical Society it was set forth that many fishes provide an abundance of vitamins. Without discrediting cod liver oil it was claimed that the oils of tuna, sardines, menhaden and salmon are excellent sources of vitamins A and D.

The District of Columbia Dental Society is working with the Bureau of Fisheries and the Bureau of Chemistry and Soils to aid in the study of these oils. It is claimed that tuna oil, for example, is 25 per cent. more potent in vitamin D than the best cod liver oil and shellfish especially are valuable in furnishing the requisite amount of iodine. It is expected that the medical profession will aid in the investigations now under way with respect to the determination of the scientific rôle of fish foods.

MORTALITY OF DIABETES

It is reported in the *Bulletin of the New York City Department of Health* that there are at least 25,000 diabetics in that city at the present time. This is a greater number than the registered cases of tuberculosis and is a clear indication of the importance of diabetes as a health problem. Whereas the mortality of diabetes has decreased among the young and middle-aged persons, there has been an increasing mortality with people of more advanced age.

MEDICAL PROGRESS

PROGRESS IN DERMATOLOGY

BY HARVEY P. TOWLE, M.D.,* AND J. L. GRUND, M.D.*

IT is interesting to note the change in the trend of the literature since the last "Progress" was published. Whereas the majority of the published papers and reports have hitherto dealt with the diagnostic side of the cases reported, during the past year there has been a very noticeable swing toward the therapeutic and etiological sides. The dermatologists, this year, have given less thought to the splitting of diagnostic hairs and more to the understanding and treatment of disease. Judged by the literature, they have become patient-conscious.

SCLERODERMA

Surgeons, as well as dermatologists, will be interested in the study which the French Society of Dermatology and Syphilis has been making of the nature and the treatment of scleroderma.

Leriche and Fontaine[1] have made a detailed and careful communication on "The Surgical Treatment of Scleroderma by means of Sympathetic Approach." They state that operation on the sympathetics will afford appreciable results provided care is taken to select cases suitable for operation. Where there is already marked and old sclerosis of the skin, sympathectomy will accomplish nothing. The operation is contraindicated also where the skin is cardboard-like and where the lesions are far advanced. However, when the disease is in its early period, when the atrophy is but beginning, and when the skin is not hard and board-like, sympathectomy finds its opportunity and, when performed, influences favorably the atrophy and the further course of the disease. In such selected cases the course of events is as follows: The circulation immediately improves; the extremities, previously cold, now become warm; pain and paresthesiae disappear; the general state is better. At the same time, movement in the extremities is increased and the joints become more flexible. The early, discrete areas of scleroderma quickly become soft, but the atrophic lesions require months, and sometimes years, to regress.

The reporters believe that surgical intervention is a useful method, even in the cases in which the disease has advanced so far that a complete cure is not to be expected or looked for. Despite this, the operation checks the onward course of the disease which, without sympathectomy, would spread to other parts. In this connection they report three cases on which they had operated four years before and in which the promising results then obtained have not been lost.

They find that, in certain cases, periarterial and chain sympathectomy give identical qualitative results. Where the lesions are small and discrete, the periarterial operation is indicated, theoretically. Chain sympathectomy is best performed when the scleroderma is diffuse and extensive. Such operation, they report, will check the disease. In sclerodactylia the periarterial operation is to be preferred. Although a unilateral operation will improve the lesions on both sides, there is danger that later, perhaps years later, new lesions will form on the non-operated side. Therefore they advise a bilateral operation.

In summing up the situation, Leriche and Fontaine state that the desideratum is to interrupt the sympathetic innervation of all of the involved regions. Even though a cure may not be obtained, there will be at least improvement, if the cases operated upon are carefully selected. This, they maintain, is more than can be claimed for the many varied medical methods.

Developing the growing theory that scleroderma is a manifestation of a disturbance of the sympathetic nervous system, Gougerot and Meyer[2] report a case of scleroderma associated with Raynaud's disease, symptoms of myxedema, pseudolyomatosis and multiple telangiectases. The association of these various diseases is considered an argument in favor of their vasomotor origin.

Hufschmitt's[3] case furnishes further evidence for this theory. There were present, in the same patient, scleroderma, mutilations of the fingers and telangiectasis. An x-ray of the fingers showed marked osteoporosis and thinning of the periosteum. The calcium content of the blood was found to be increased, a fact which led the reporter to ask whether the increase was the effect or the cause of the disease. The basal metabolism was + 47. Ligation of the thyroid arteries lowered the metabolic rate and, in the course of several weeks, helped to cause the scleroderma to disappear.

Milian, Perin and Horowitz[4] report a case of scleroderma of the hips, the appearance of which coincided with the removal of the ovaries. The localization was, they thought, explained by the fact that this region was subjected to great irritation. In the discussion which followed the exhibition of the case before the Society the reporters stated that, in their belief, the scleroderma was the result of the removal of the ovaries. Moreover, the ovaries had been diseased for some time prior to their removal. An x-ray

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examination revealed rarefaction of the bones of the hands, erosions and destruction of the phalanges on the right, decalcification of the hands and of the left foot, and hyperostosis. The basal metabolic rate was + 28. The blood calcium was + 9. [These findings are suggestively similar to those found in Hufschmitt's case just mentioned.]

Naegeli has discussed the etiology and pathology of scleroderma quite exhaustively[5]. He states that the disease constitutes from 1 to 1½ per cent. of all the cases seen in his clinic in Berne. He finds that in all patients with scleroderma the thyroid functions feebly. Some patients have a colloidal goitre. In a certain number of women he found an ovarian disturbance, such as hypoplasia. None of his scleroderma patients had syphilis. The blood calcium was found noticeably altered in some cases. In one patient with facial hemiatrophy and a progressive sclerodactylia the blood calcium was 11 mgm. In another case with a localized scleroderma, the blood calcium was at first 14 mgm. which, under treatment, fell to 12 mgm. Still other cases showed an elevation of the blood calcium in varying degrees. In one case the blood calcium index was as high as 38 mgm.

Naegeli's conclusions were that "as a result of these findings one can only conclude that the thyroid gland plays a more important part in the calcium metabolism than is generally considered, or else that in certain cases of scleroderma the virus affects the parathyroids without producing a combination of scleroderma and calcification". Calcification, he believes, points to a thyro-parathyroid syndrome. He also believes that if x-ray examinations were made more frequently, calcification would be found more often.

ALLERGY

Lehner and Rajka have evolved a new theory[6], according to which the first step in the production of allergy or the allergic state is the action of a noxious substance upon a non-specific intermediary substance which is resident in all organisms. A reaction may, or may not, follow, depending upon the relative amounts present in a given case of two specific substances, the one known as reagin, the other as dereagin. Reagin accelerates and intensifies reaction. Dereagin weakens and inhibits. So, according to whether reagin or dereagin dominates, allergy is produced or is not produced.

Oriel and Barber[7] believe that it can be demonstrated that certain phenomena occur with remarkable constancy in the various manifestations of so-called allergy. These phenomena seem to be constant, regardless of whether the allergic state is intermittent, as, for example, in certain cases of urticaria and of asthma, or whether it is chronic with periodic exacerbations and remissions, as in infantile eczema. At all times there can be demonstrated a certain cycle of events. First, there is a rise in the amino acid content of the blood. Secondly, there is an increase in the ammonia excretion which is out of all proportion to the excretion of acid in the urine. Thirdly, there is a lowering of the corpuscle content of chloride during the paroxysm with a subsequent excretion. Fourthly, during the pre-paroxysmal or paroxysmal stage, there is a deposition of urates. Fifthly, during the period of active manifestation the ether reaction can be demonstrated in the urine. Sixthly, in the postparoxysmal stage there occurs a decreasing acidity of the urine proceeding, sometimes, even to a marked alkalinity. They interpret the deposition of the urates and the ether reaction of the urine as an indication of its colloid state, probably comparable to the colloid change that is thought to occur in the blood during anaphylactic shock. They think it possible that the increased ammonia excretion and the retention of chlorides represent protective mechanisms.

There is still prevalent among too many physicians the tendency to regard the food tests as the last word in the diagnosis of allergy and as an infallible index to treatment. Sulzberger and Weinberg's article[8] is another proof of the error of that tendency. They report the case of a patient with a weeping eczema of the type which is so often unhesitatingly pronounced allergic. The fact that the skin responded positively to tests of several kinds of food would seem to make the diagnosis impregnable. The patient was a woman of 33, who worked in a hotel as a chambermaid. For six months she had presented a mixed eruption of erythema, papules and vesicles over the hands, the arms and the upper parts of the body, which itched so intensely as to interfere with sleep. She had lost 40 pounds during the six months and suffered in her general health in consequence of the eruption. During all this period the woman had received a great variety of treatment but without result. Much was hoped for from the elimination of the positively reacting foods from the diet but, disappointingly, their elimination seemed to have no effect upon the eruption. Dr. Sulzberger and Dr. Weinberg, when the patient came under their care at this time, thought the eruption was of external, not of internal, origin. They, accordingly, tested the patient by the patch method with the various substances with which she came in contact in the course of her daily work. The skin reacted vigorously to black flag insect powder, which contains pyrethrum. It then developed that it was the patient's duty to distribute this powder in and around the hotel rooms every week. Removal of the powder and a thorough cleansing of the rooms effected a complete and lasting cure.

This case demonstrates that a positive food test does not always indicate the road to cure.

ETIOLOGICAL

There have been a number of studies made, during the past year, of the etiology and pathogenesis of dermatological diseases. One of the most intriguing theories evolved is that of Bonjour in regard to the etiology of warts[9]. Everyone, he says, has met with frequent disappointments in his treatment of warts, whatever method used. Bonjour does not believe that warts are contagious. He believes that they are of psychic origin. For years he has been treating them by suggestion, and with success. He says that, not only can warts be removed by psychic means, but they can also be reproduced by the same method. He explains. Effective suggestion lowers the diastolic blood pressure; it is this phenomenon which brings about the warts. Conversely, an increased blood pressure favors the development of warts.

A much more convincing study in etiology is that made by Spillmann, Drouet and Verain of the "Acid Base Equilibrium in Dermatology"[10]. They examined the PH index of the blood in fifty cases; 30 were of eczema, 4 of urticaria, 2 of prurigo, 4 of erythroderma, 1 of lichen planus and 9 of psoriasis. In most instances they found a disturbance of the acid base equilibrium, which might be either an acidosis or an alkalosis. The relation between the alkali reserve and PH was variable. Sometimes one was up and the other down; sometimes both were up or both were down; sometimes one was normal while the other was either up or down. Acidosis or alkalosis, as such, was not characteristic of any one disease but was found indiscriminately in them all. For example, of the thirty cases of eczema, fifteen showed acidosis and fifteen alkalosis. Psoriasis was the only disease which showed a notable inclination one way or the other. Eight cases of psoriasis out of nine showed an alkalosis. The writers concluded that, in the cases studied, the ordinary causes of acidosis were not operative. Something more subtle was at work, such as a disturbance of alimentation, a hepatic dysfunction, or allergy. In support of this hypothesis they point to the fact that allergy has been proved by experimentation to produce acidosis and to the further fact that most of the cases examined fall within the anaphylactic group. [Psoriasis?] As to the cases of alkalosis, they conclude that they may be due to the excessive introduction of bases, or to their insufficient elimination. They state also that alkalosis and vagotonia appear to be associated. In their opinion the determination of the acid-base equilibrium is of great value as it furnishes a rational foundation for treatment. Their good results are a proof.

Wainwright[11] reports a study of three cases of carcinoma which has a bearing upon the theory of the etiological rôle of irritation. In all three cases carcinoma followed a single trauma. In all three cases the carcinomatous nature of the growth was verified by the microscope. The first case was that of a man of forty-four who struck himself a severe blow on the cheek with a wrench. A squamous epithelioma developed on the site of the wound. The second case was that of a man of sixty-two, who suffered a frostbite of his ear; subsequently, a basal cell epithelioma developed on the frozen area. The third case was that of a boy of fifteen, who abraded the skin over his shin; the wound never healed and a year after the injury a squamous cell epithelioma had developed.

An editorial in the *Journal of the American Medical Association*[12] emphasizes the same rôle of irritation in the causation of epithelioma. The editorial says, in part, that much work is being done in many laboratories since the report in 1916 by Professor Yamagiwa that he had succeeded in producing true skin carcinoma on the ears of rabbits by painting the ears with crude coal tar every few days. One outcome of this study, says the editorial, has been the support of the theory that cancer must result from prolonged stimulation of growth by any means whatsoever and that carcinoma probably is not the outcome of the action of any one specific agent. Furthermore, the outcome of the stimulation may equally well be a squamous carcinoma, a glandular carcinoma or a sarcoma, depending upon the tissue that is stimulated.

Since the practice of isolating patients with erysipelas has not yet entirely died out, much interest attaches to Therese Kindler's experiments in the transmission of the disease[13]. She inoculated three patients with material derived from bullae occurring on a patient having erysipelas. Each subject of the experiment received fourteen inoculations. The erysipelatous material was rubbed into the freshly scarified areas on the inner surfaces of the forearms and on the interdigital webs. Then, to make the experiment more impressive, she bound up the inoculated, scarified areas in dressings which had already been used on cases of erysipelas. Not one of the experiments succeeded; not one of the inoculations took.

By means of a study of experimental sporotrichosis, Kesten and Martenstein[14] draw certain conclusions which they apply to the etiology and, through the etiology, to the treatment of fungus diseases. The experiments were conducted on rats. The results, they concluded, could not scientifically be applied to human disease. Yet, they argue, the fact that many fungus infections can be eradicated by means of the Roentgen ray and by other local measures would seem to point to the probability that all fungus diseases of the skin are certainly not a mere local manifestation of a systemic disorder. Therefore, it is illogical and unsound therapy to attack a fungus disease, like dermatophytosis, for example, by intravenous medication unless there is proof in the

blood stream, as previously determined by animal investigation, of either the fungus or its products.

It is interesting to note that, during the past year, there have been four articles published having to do with cold and the weather as etiological factors in skin diseases.

The first of these was by Perutz, Brügel and Grünfeld[15] on the pathogenesis of "congelation urticaria." They define this disease as a dermatitis which develops after contact with ice, a cold wind, or cold water. It manifests itself in the form of itching wheals. The eruption may be limited to the region of contact, or it may spread over large areas. Tests and experiments were made to determine the pathogenesis. Nothing could be found which would justify considering the affection as allergic. There was only a hypersensitiveness of the thermo-receptive apparatus. Therefore, they conclude, the disease is a vasoneurosis of the thermo-receptive apparatus.

Symes, writing on the infectivity of erythema nodosum[16], says that whatever the causative organism may be, its period of greatest activity in all European countries is in March and April. That fact, he says, groups erythema nodosum with such diseases as pneumonia, streptococcic infections and epidemic encephalitis. His explanation is that the cold weather and the absence of sunlight prepare the way for the infection. He believes that it is possible that the infective organism may lie dormant in the tonsils or the nasopharynx for weeks or even months.

Under the title, "*Perniosis* or *Erythrocyanosis*," Klingmuller and Dittrich[17] report another of the group of diseases having to do with a disturbance of the vascular innervation. Clinically, the disturbance results in a discoloration of the skin, which varies in color from red to dark blue. Sometimes vesicles and ulceration follow the discoloration. This form of disease Klingmuller and Dittrich call "perniosis" because, according to their view, a trifling degree of cold is enough to produce the symptoms. Sometimes the clinical signs appear even in the middle of the summer, if there is a sudden fall of temperature, because the small vessels are so sensitive to chilling. If the attacks are repeated over a long time, actual damage is done to the media and intima, which may eventually become serious enough to produce thrombosis. The disease is most prevalent in the spring and fall. The first symptom is the appearance of a pinpoint to a pinhead sized reddish spot, which at first involves the follicle. This primary eruption resembles cutis anserina. The eruption is multiple and covers large areas on the legs and buttocks. Soon true perifollicular infiltrates develop, which are seen as a widely disseminated mass of red or bluish red, pointed cones, bearing central hyperkeratoses. The skin now feels like a nutmeg grater. Along with the eruption the skin becomes discolored. The seat of the disease is the lower leg; the ankle is usually spared. Under the microscope there is found edema of the cutis with vascular dilatation, changes in the media and the intima of the vessels and perivascular infiltration.

Christine's "*Erythema Annulare Centrifuge*[18] would seem to belong to the same class as Klingmuller and Dittrich's perniosis[17]. Christine remarks that the seasonal occurrence of erythema multiforme has always given rise to the suspicion that the appearance of the disease might bear some relation to the barometric pressure. He then reports four cases the appearance and development of which paralleled the oscillations of the barometer. Therein lies the resemblance of this disease to perniosis.

Samuel and Strauss have studied endocrine dermatoses in 290 women[19], the majority of whom had some form of pruritus. They found also that the majority had an increased blood sugar. Therefore, they tried insulin as a method of treatment, giving 10 to 15 units for several days. At the same time they lowered the carbohydrate content of the diet. Both pruritus and hyperglycemia disappeared.

IRRADIATION

We have included under this heading the various forms of irradiation used in the treatment of diseases of the skin: radium, the Roentgen ray, the Grenz ray and the ultraviolet lamp. They are all sources of radiant energy, are closely allied to one another and are, therefore, best considered in one group.

(1) *The Roentgen Ray.* Hubermann[20] stresses the importance of the dermatologist to the roentgenologist. He believes that no roentgenologist who is not himself a trained dermatologist should undertake to treat a skin condition without a trained dermatologist at hand to give advice and counsel.

Gougerot, Burnier and Giraudeau[21] have contributed an interesting article upon x-ray biotropism. Speaking broadly, their definition of biotropism is double action, where the first effect of the remedy used is to aggravate the disease and its second effect is to heal. They report this double effect in a case of chronic actinomycosis which they had exposed to the Roentgen ray. The first result of the irradiation was that the actinomycosis was made worse. Then, as time went on, this first, seemingly harmful effect, wore off and the lesion disappeared after three further exposures.

Tzanck[21], in discussing this case, offers his explanation of the phenomenon of biotropism. The first dose, he says, stirs the microbe to greater activity, giving it greater virulence. In consequence, symptoms of an acute exacerbation become manifest in the diseased area. But now if subsequent doses of an increased strength be given, the microbe is killed and improvement follows in the lesion. Thus biotropism is caused

by the administration of a dose of the therapeutic agent, which activates the microbe because it was too small to be destructive. It irritates and stimulates but does not kill.

Pautrier's method of treating lichen planus by means of x-ray irradiation of the spinal sympathetic ganglia has excited much discussion in French medical circles as to the action of the Roentgen ray on the sympathetic nerves. Del Buoni[22] contributes his conclusions to the discussion, saying that Roentgen irradiation of any part of the body causes a characteristic disturbance in the equilibrium with a preponderance of vagus tonus. This disturbance, Del Buoni believes, is produced by way of the skin fibres of the parasympathetic nervous system. There is, too, a distinct action on the suprarenal metabolism, which manifests itself in the form of a definite and prolonged drop in the blood pressure.

Finzi[23] believes that the choice between radium and the Roentgen ray for the treatment of a malignant disease is determined by two factors, —the individual case in hand and the skill of operator with either method. In his opinion, Roentgen therapy is the method of choice in all radiosensitive growths and radium in all small growths which tend to remain localized. He cites rodent ulcer as a classic example of the latter, together with the small epitheliomata of the skin. He believes, too, that radium is the better in the treatment of all radioresistant growths. In the mouth he has obtained better results with the Roentgen ray, or with the combination of the ray treatment and radium.

Strumpke also writes on the choice between the Roentgen ray and radium in the treatment of skin cancer[24]. As the result of his fifteen years' experience, he has come to the conclusion that the Roentgen ray is not so effective in the treatment of lupoid carcinoma as radium. He is also convinced that care is needed in treating lupus vulgaris with the Roentgen ray.

Schreiner and Wende[25] made a study of the cure of basal cell epithelioma on 355 cases, using chiefly the Roentgen ray or radium. In their series they found basal cell epithelioma most common between the ages of 60 and 80 and rare before 40. About 25 per cent. of the cases arose from warts, moles or scaly spots. About 17% began as a "pimple". "It is probable that the site of origin is from the basal cells of the epidermis, hair follicles or skin glands, and probably quite frequently from preëxisting benign tumors of the skin glands and also from some forms of nevi." Seventy-five per cent. of the tumors were of the solid variety and 25 per cent. were adenomatous in structure. They did not observe one case of metastasis. Growth was observed to be slow so long as the epidermis remained intact, i.e., was not ulcerated.

Treatment was by means of the unfiltered Roentgen ray, by radium and, in a few cases, by electrocoagulation and surgery. The Roentgen ray was used unfiltered, in from one to three times the erythema dose, 5 milliamperes, 140,000 volts, 22 centimeters distance and from 4 to 7 minutes' time. Radium was used as a bomb—16 millicurie radium hours with 0-1 mm. brass filter.

Out of 340 patients they obtained primary healing in 88 per cent., of whom 82 per cent. remained healed until death. Of the far advanced cases 39 per cent. showed primary healing. Of these, 11 per cent. were well after five years.

Fuhs and Konrad[26] carried out a series of therapeutic experiments in 157 cases of various dermatoses by means of indirect radiation with the Roentgen ray. For example, they tried the effect of irradiation of the thymus in cases of psoriasis, pruritus and vitiligo. They exposed the pituitary gland to irradiation in cases of acne, alopecia, chronic eczema and lichen urticatus, psoriasis, pruritus and chronic urticaria; the sympathetic for chronic eczema, lichen planus, Raynaud's disease, pemphigus, pruritus and scleroderma; the spleen for acne, eczema, furunculosis and urticaria; and the regional lymph nodes for discoid lupus erythematosus. While none of these various experiments were without some result, the only excellent outcome was in one case of alopecia in which irradiation of the pituitary was followed by a marked improvement of the alopecia.

Tamiya and Koyama[27] report the use of the Roentgen ray in the treatment of 13 cases of burns, mostly of the first and second degrees, and of two cases of cauterization. Their conclusions are that under this form of treatment the pain, redness and swelling decrease and that healing occurs more rapidly than with other forms of treatment.

Gaté, Coste and Michel[28] extol the virtues of the use of the unfiltered Roentgen ray in the treatment of verrucous tuberculosis. They report two cases so treated, one of marked extent, the other severely ulcerated.

Huet[29] reports a case of buccal lichen planus, resistant to other forms of treatment, which was cured by four treatments with the Roentgen ray. A filter was used. Every ten days an exposure was made over the sympathetic roots from the 6th cervical to the 3rd dorsal. The eruption began to disappear within two weeks of the beginning of treatment.

(2) *Radium.* Vallon[30] reports excellent results in the treatment of spontaneous keloid by means of radium. He uses a 2 milligram plaque with an aluminum filter.

(3) *Grenz Ray.* Konrad[31] has treated 400 cases of various forms of skin disease with the Grenz rays. He found them of special value in the alopecias, in juvenile warts, in eczema of the eyelids, in verrucous tuberculosis, in ery-

thema induratum and in nevus flammeus. He found the Roentgen ray of greater benefit in acne, the various forms of eczema, staphylococcic infections and cancer of the skin.

On the other hand, Bruner[32], as a result of his experience with 200 cases of skin disease, came to the conclusion that the Grenz ray treatment is not superior to Roentgen therapy and adds nothing to it. Its sole indication, according to Bruner, is in the treatment of superficial lesions of the scrotum and eyelids. He also calls attention to the possibility of creating an ulcer by an overlarge dose. Experimental study of the biologic action of the Grenz rays shows that it is quite the same as the biologic action of the Roentgen ray.

(4) *Ultra-violet Ray.* Kovacs[33], while recognizing the value of light therapy, reminds the physician that it also has its dangers. He, therefore, pleads for its thoughtful use. The treatment, he says, must be based (1) on an accurate diagnosis of the disease and, at the same time, of the patient's general condition; (2) on a proper dosage, which shall take into account the capacity of the source of the irradiation; (3) experience in judging the beneficial as well as the possible ill-effects. He condemns the home use of ultraviolet generators unless these three factors can be fulfilled.

Schiller[34], too, points out that ultraviolet therapy has a rather limited field of usefulness. He states that it is, perhaps, rather more effective than other measures in verrucous tuberculosis and in a group of septic conditions, such as septic wounds and ulcers, but on the whole, few skin diseases cannot be better treated by other methods. The ultraviolet ray has proved to be a more or less indifferent therapeutic agent. At its best it is only useful as an adjunct to other treatment. Like Kovacs[33], he deplores its indiscriminate use by the medical profession and the public.

Kropatsch[35], in order to determine which of the two methods has given the better results, has studied the clinical histories of 1332 patients treated at the Lupus Institute of Vienna either by the Finsen Lamp or by surgical measures. He concludes that the results with either alone are about equal and that the best results are obtained by their combination.

TREATMENT

(1) *Gold Therapy.* Investigation of gold therapy still continues, although practice is now slowly limiting itself to its use in cases of lupus erythematosus and of true tuberculosis. As will be seen from the samples of current reports to follow the method is still *sub judice.*

Gaté and Michel[36] report a case of lupus vulgaris which was greatly improved by the injection of the gold compound, theocrysine. The patient had had the disease for thirty-eight years, during which time various methods of treatment had been tried, including cauterization, excision and x-ray. All were failures as eventually the disease recurred and spread. Then Gaté and Michel tried theocrysine. The compound was administered intravenously every eight days in doses of 0.05 gram. For the most part, the lesions healed, leaving scars. Healing, however, was not complete as a small portion was still active.

Paranougian[37], before the Manhattan Dermatological Society, reported a case of lupus vulgaris treated by gold thiosulphate. He declares that six weeks after the cessation of treatment the case presented only pigmented and depigmented scars at the sites of formerly active lesions. Paranougian believes that the gold therapy has won a legitimate place in the treatment of lupus vulgaris.

At the same meeting Paranougian[37] presented a case of tuberculides. Only twelve injections of gold were needed to eradicate the disease. Up to the time of reporting there had been no evidence of recurrence.

Skeer[38] has reported a case of lichen scrofulosorum in which he had obtained excellent results from intravenous injections of gold and sodium thiosulphate. On the basis of this experience Skeer declares that the beneficial effects obtained in the treatment of diseases definitely tuberculous in their nature asserts the practically specific value of gold in tuberculo-toxic dermatologic entities.

It is, however, in the treatment of lupus erythematosus that the gold salts are most employed. In the *Archives of Dermatology and Syphilology of the Hospital St. Louis*[39], Paris, thirty-eight cases of the use of gold therapy are reported. The best results were secured in the superficial, erythematous types of the disease. On the contrary, the fixed, infiltrated types were observed to respond much more slowly. It is reported that twenty-five cases were apparently cured, seven were improved and six were not affected. Even so, six of the twenty-five cases formerly reported cured had recurred.

[This communication is a good example of the tendency which seems to prevail almost universally among those who are using the gold salts. If the signs of disease disappear, the case is at once reported as cured. Too often it happens that the supposedly "cured" case later recurs. This occurs so often as to throw considerable doubt upon all reports.]

Saunders[40] reports a series of thirty-two cases of lupus erythematosus treated with gold salts. Thirty were of the discoid type. Fifteen were clinically cured; four were almost cured; six were improved; and one was worse after treatment than before.

Haxthausen[41] reports a series of one hundred and nine cases. The gold salt which Haxthausen employed was the chloride, which, he believes, enjoys certain advantages over the other

gold compounds more commonly used. First of all, the chloride cures, or definitely improves, as many cases as any of the other compounds. It is also cheaper and safer. Moreover, possessing bactericidal power, the solution need not be sterilized. The dose is at first 1 milligram of a 1:1000 solution. Gradually the size of the dose is increased to 5 milligrams. The interval between doses was usually seven days. It was found that even better results were obtained if irradiation with the Finsen lamp was combined with the injections of the gold chloride.

Haldin-Davis[42] is enthusiastic over the action of the gold compounds in lupus erythematosus. It is his custom to administer dextrose several hours before giving the gold, because, in his belief, by so doing one prevents the fixation of the gold in the liver cells and this forestalls toxic reactions. It is also his custom to give small doses of the gold at first. No untoward reactions occurring, he then increases the subsequent doses slowly.

Sezary, Dérot and Guédé[43] argued that if gold therapy was good in cases of tuberculosis, the close relationship of the bacillus of *leprosy* to the bacillus of Koch justified a trial in leprosy. Accordingly, they tried gold in three cases. For a time, the leprosy seemed to improve, but five days after treatment was stopped, fresh lesions began to appear. In two of the cases the leprous lesions lighted up after each injection. Fever and increased pain accompanied the activation of the cutaneous lesions.

(2) *Miscellaneous.* The treatment of tuberculous processes of the skin by dietary methods is attracting considerable attention abroad. The so-called Gerson diet is the one usually followed, although there are several modifications also used, which differ more in detail than in principle.

Bommer has published an interesting article[44] on the dietetic treatment. From the diet he eliminates salt. Meat is also omitted or, at least, greatly reduced. Foods rich in fats but low in carbohydrates are given. As prescribed, the daily ration contains protein 90 grams, fat 162 grams, and carbohydrates 222 grams. Liberal amounts of fresh fruits and vegetables are added to provide vitamins. The fat content of the diet is derived largely from unsalted butter. Milk or cereals with milk are an important part of the diet. The individual meals are purposely small, but are given seven times a day. Cod liver oil is added twice a day. After the diet has been well instituted, sun and light baths are begun.

Bommer reports that after three or four weeks of this régime, the tuberculous lesions gradually dry up. After another three to six weeks period of dietary treatment, that is to say six to nine weeks after the beginning of treatment, the dry crusts fall off, leaving a scarcely visible, smooth scar. In lupus vulgaris the brown nodules and the infiltrated, erythematous lesions gradually become smaller and finally disappear. There has been no relapse in any case which had left the sanitarium perfectly recovered. In many cases, which did not progress so rapidly as the others, stubborn persistence in the dietary treatment was finally rewarded by healing. One good result of this treatment, Bommer says, is that the resulting scar is thin and inconspicuous. He says also that cure usually comes in from six to eighteen months.

Wichmann[45] has also written interestingly on the same topic. He has used the Gerson, Sauerbruch and Hermannsdorfer diet in thirteen cases of tuberculosis of the skin. With this salt-free diet he gives cod liver oil, an addition which he considers of great importance because the oil contains phosphorus. During the course of the dietary experiment all local therapy was suspended. The results were favorable in nine of the thirteen cases. Four cases were not influenced, but three of these patients had been on the diet but three or four weeks. The remaining one of the four, however, had been under treatment for thirteen weeks without result. In the majority of the nine cases favorably influenced the tuberculous lesions disappeared so completely from the skin and mucous membranes that not even infiltration remained behind. The best results were obtained in what Wichmann calls the exudative forms of lupus. The dry, squamous type was resistant and did not appear to be influenced at all. Eight patients were followed up three years after discharge. Four had had no relapses; four showed signs of recurrence. If to the salt-free diet treatment the ultra-violet lamp was added, Wichmann felt that the results were even better than with the dietary treatment alone. The important factor in the Gerson method was, in his opinion, the phosphorus containing cod liver oil.

Jadassohn[46] has published "Remarks on Tuberculin in Dermatology," based on observations made in his clinics at Berne and at Breslau. As a remedy he does not consider tuberculin of great value. The best results which he had observed were in the treatment of the tuberculides. But then, he comments, these tend to get well spontaneously anyway.

He thinks that the best explanation of the action of the tuberculin is that evolved by Martenstein. This, in essence, conceives that tuberculin is poisonous to the tuberculous organism but not to the non-tuberculous. The tuberculous organism elaborates certain specific substances which react with the poisonous tuberculin. This reaction represents an attempt to convert the tuberculin into a non-poisonous substance. The conflict is helped or hindered by the presence or absence of more or less hypothetical substances known as procutines and anticutines, the presence of which is suspected but not proved. When procutines are present, the organism is resistant to tuberculosis. When anticutines dominate, the

organism is susceptible. It is on such a hypothesis that Jadassohn would explain the cure and failure in tuberculosis.

The reader may be interested to compare the hypothesis in regard to tuberculosis with the hypothesis of Lehner (loc. cit.)[6] in regard to allergy. It will be seen that the two hypotheses bear many points of resemblance.

Mihazlovic[47] has treated ten psoriatics with an extract of psoriatic scales made by digesting them in pepsin and trypsin. At intervals of one to five days he injected 1 c.c. to 10 c.c. of the extract subcutaneously. There were no reactions, either local or general. The first sign of response to the injection was an itching. This was followed by a loosening of the scales so that they came off more easily and more quickly. In due course the papillary hemorrhages which, in the ordinary case, can be excited by grattage could no longer be evoked. The first lesions to disappear were those in the scalp and on the abdomen. Those on the elbows and knees were the last to go. In nearly every case leucoderma, which had the same size and shape, appeared on the sites of the former psoriatic lesions. Although scales from another person might be used, Mihazlovic believes that the results were better when the extracts are made from the patient's own scales. Unfortunately, this mode of therapy did not prevent relapses.

One month later, Campbell and Frost of Los Angeles published their results with an extract made from psoriatic scales[48]. Whereas Mihazlovic used pepsin and trypsin as a digestant, Campbell and Frost used alcohol. They digested about 0.2 grams of psoriatic scales in 20 c.c. of alcohol. This was filtered and of the filtrate they gave an injection of from 1 c.c. to 4 c.c., on the average, 1.5 c.c. per dose. They encountered no reactions, either local or general. They report that every case responded to the treatment in some measure, although in varying degree. The objective symptoms were the same in all cases, but the time of the reaction varied widely. Objectively, the first sign of reaction was a thinning and loosening of the scales. Next, there occurred paling of the centre of the lesion; the smaller, nummular lesions usually showed a single pale area in their centers; the larger plaques showed multiple areas of paleness, which gradually widened until they covered the whole area of the lesion clear to the periphery. When the spreading was complete, the skin had become again normal. The last stage showed a smooth, slightly discolored area, which corresponded in size and shape to the original psoriatic lesion and which bore in its periphery a few, discrete, surviving, psoriatic papules. Gradually the papules disappeared. It had been observed often enough to excite comment that between the first and the second stages it was more difficult than in an ordinary case to excite papillary bleeding. It will be seen that the observations of Campbell and Frost of the changes induced by an alcohol extract agree almost perfectly with the observations made by Mihazlovic with a pepsin-trypsin extract.

Oppenheim[49] has reported another form of therapy in psoriasis. He had noticed that intravenous injections of acriflavine were followed by hyperpigmentation of the skin, especially about the face and hands, with a subsequent desensitization to sunlight of the skin so pigmented. It occurred to him that a combined treatment of acriflavine injections and ultraviolet light exposures might act favorably upon such diseases as psoriasis, acne, lichen planus and pemphigus, which are known to be favorably affected by ultraviolet light. Accordingly he experimented with the combined method in twenty-five cases of psoriasis. Nine of them he subsequently demonstrated before the Vienna Dermatological Society. In three cases of the series the treatment had to be omitted because of vomiting. In one case there was no improvement after eight injections. In the remaining twenty-one cases there were no adverse reactions to the injections and the psoriasis disappeared completely, leaving behind a distinct pigmentation. As a rule, the injections were given tri-weekly; the total number needed to give a good result varied from fifteen to twenty-six.

In an article on the treatment of urticaria and angioneurotic edema Brown[50] gives the results of his observation of 160 cases. For most cases he approves of the usual measures: a purge in the early stages; the elimination of the cause of the eruption, if the cause can be discovered; external applications, such as baths, with or without soda, sponging with alcohol or with menthol in alcohol, calamin lotion with one per cent. phenol, and ointments containing menthol or phenol. Iced compresses may be used locally to reduce swelling. He also commends the use of bromides internally. But it is to ephedrin that he gives most of his attention. Brown considers ephedrin the remedy of choice for the symptomatic relief of urticaria. The hydrochlorate acts better than the sulphate, he thinks. It may be given by mouth in the form of capsules, in tablets, or as a 3 per cent. aqueous solution, of which the average dose is 15 or 16 minims. Peptone is recommended for a non-specific therapy in cases where the cause of the eruption cannot be found. Brown uses a 33 1/3 per cent. sterile solution made after the formula of Schiff, peptone siccum, glycerin and water in equal parts. To use peptone, he first performs a cutaneous test to detect sensitization, if present. Then he gives intradermally a first dose of 1 minim of the 33 1/3 per cent. solution. The second dose, also given intradermally, is of two minims. The third dose is of three minims and may be given intradermally or subcutaneously. Thereafter all doses are given subcutaneously. If there have been no reactions of moment, the dose is increased by one

minim with each injection. The preferred frequency of administration is twice a week. Under certain conditions once a week may be preferable. Brown also prescribes peptone by mouth, 7½ grains in capsule just before meals. Given in this way peptone is thought to desensitize the organism against the various food proteins.

The study of *leprosy* not only continues but is becoming more intensive. As a reward we are not only acquiring a better understanding of the disease but are slowly increasing the efficiency of our treatment. One of the outstanding discoveries of recent years, from a therapeutic point of view, was the ethyl ester of hydnocarpus. There is still much to learn concerning its action and the best method of its administration. One of the latest contributions to that study is by Nolasco[51]. He infiltrated the lesions with the ethyl ester of hydnocarpus and then studied under the microscope the effects upon the lesion. In one series the nodules were injected over a period of months; in a second series, they were injected but once; and in a third series four or five times. The leprous tissue in the lesions of the first series was found to be markedly reduced. On the other hand, in a control series, in which the drug was administered by the usual method of intramuscular injections but without the local infiltration of the experimental series, the changes in the leprous tissue of the lesions were very much less marked than in the local infiltration series.

Boissel contributes an article upon the remarkable action of magnesium hyposulphate upon anaphylactic shock[52]. He injects 10 cc. of a 10 per cent. solution every four days. Often he supplements this by administering the magnesium by mouth to the amount of 2 to 3 grams every twenty-four hours. He reports that he has noted two types of action. First, there is an immediate effect, which ensues very rapidly, often as rapidly as that of epinephrine. Then there is a secondary action, which is preventive in nature, tending to thwart future attacks. Boissel's best results were obtained in asthma, but the results in urticaria, eczema and purpura were very encouraging.

Dr. Charles Ferguson of the Public Health Service at Ellis Island writes to the *Journal of the American Medical Association*[53] that he has found an ointment made up of equal parts of hydrous wool fat and petrolatum with 15 per cent. of xylene very effective, cheap and clean in the treatment of pediculosis.

Kreibich[54] advocates the use of infusions of sodium chloride solution by the drop method in the treatment of burns.

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CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
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CASE 17181

PAIN IN THE RIGHT HYPOCHONDRIUM

SURGICAL DEPARTMENT

An Irish laborer fifty-nine years old entered September 11 complaining of pain in the right side of the chest and flank. For six months he had had a short morning cough productive of a very little thin white sputum.

Five months before admission when he was in excellent health and working hard he had sudden onset of dull aching pain occurring first immediately after the noon meal, then after every meal, localized to an area about the size of a palm beginning in the epigastrium and extending around the right hypochondrium to the midaxillary line two centimeters above the costal margin and four or five centimeters below it. It was not related to the kind of food or to exertion or change of position. It would gradually pass off in about an hour. Although it distressed him a good deal at times he never stopped work. After three weeks it gradually disappeared and he felt entirely well for over three months. Five weeks before admission his skin was slightly yellow. Three weeks before admission the pain recurred. He at once stopped work and went to the country for a rest. This time, however, the pain persisted, accompanied by marked anorexia. He had grown progressively weaker, his weight had fallen from 158 to 140 and he had become slightly yellower, especially his eyes. For two or three weeks his urine had been dark. His abdomen had shrunken. For four days the pain had been much more intense and constantly present regardless of food. With the pain there had always been tenderness over the area involved. For the past four days this had been intensified. Even a deep breath was painful, though not with the catching pain of pleurisy. He pointed to the maximum point of tenderness well out in the flank and in the anterior axillary line. He felt very weak and any exertion caused dyspnea. For the past four days his morning cough had been accompanied by slight nausea.

His family history was good.

He had always been healthy and strong. He had had scarlet fever in childhood. His habits were good. He very rarely used alcohol.

Clinical examination showed a well nourished man with a slight icteric tinge to the sclerae and a subicteric tinge to the skin. The nasal septum deviated to the left. The apex impulse of the heart was felt in the fifth space 9.5 centimeters to the left of midsternum, 2.5 centimeters outside the midclavicular line, the right border of dullness 2 centimeters to the right, the supracardiac dullness 4. The sounds were of poor quality, the apex and aortic second sounds split. There was a systolic murmur at the apex. The artery walls were palpable and tortuous. The blood pressure was 130/85. The abdomen was distended, tense. The liver dullness was four fingerbreadths below the costal margin in the right flank. The edge of a mass was felt in the right flank four fingerbreadths down, moving with respiration. There was tenderness over the mass, which presumably was the liver. The left lobe could not be palpated. No fluid wave or shifting dullness was made out. There was questionable clubbing of the fingers. The pupils and reflexes were normal.

Before operation the amount of urine is not recorded. The specific gravity was 1.038 to 1.020. One of three specimens showed sugar and rare leukocytes. Blood examination showed 4,700 to 7,900 leukocytes, 56 to 68 per cent polynuclears, hemoglobin 60 to 70 per cent, reds 3,800,000 to 2,450,000. Two smears showed slight achromia, one slight anisocytosis. A Hinton test was negative. The stools showed a questionable guaiac at one of four tests. The fasting contents of the stomach were 10 cubic centimeters of gray watery fluid, free hydrochloric acid 6, combined 4, guaiac negative. A test meal at half an hour gave 20 cubic centimeters of similar material, free hydrochloric acid 46, combined 2, guaiac negative. A test meal at one hour gave 80 cubic centimeters of similar material, free hydrochloric acid 64, combined 6, guaiac negative. The icteric index was 10 to 8. A van den Bergh test was too low to read. A liver function test showed 25 per cent retention.

Before operation the temperature was 98° to 100°, the pulse and respirations were normal.

X-ray examination with a barium meal showed the stomach empty at six hours. The head of the motor meal was in the cecum. Peristalsis of the stomach was vigorous. The first portion of the duodenum was irritable. The cecum showed some spasm. The patient complained of tenderness over the region of the appendix. The right diaphragm was high and slightly limited in excursion. "The findings in the stomach, duodenum and cecum are abnormal but may not indicate definite pathology in any one. Similar findings have been seen in extensive inflammatory conditions." At a Graham test the outline of a normally filled gall bladder was not visible in any of the plates taken. "The findings are consistent with disease of the gall bladder or liver." (Note: There is some doubt as to whether this test was accurate. The pre-meal plates were poor.) There was an apical abscess at the root of a bicuspid.

A medical consultant advised exploratory operation.

During the first five days the abdomen was more distended and shifting dullness and fluid wave developed. The liver was not so easily palpated as at admission, but appeared slightly larger. The pain was less and the patient felt better.

September 15 biliary drainage was done. The tube passed easily. There was some cellular débris in mucoid element. No cholesterol crystals were seen, and no polynuclears. There were some amorphous patches of golden yellow material but none bright and striking. September 18 the abdomen was softer. The spleen was easily palpable.

September 19 operation was done. The patient did well for the first two weeks. October 1 a culture from the wound showed staphylococcus albus. October 5 there were sticky râles at both bases. The other signs were obscured by the surgical plaster; no definite evidence of consolidation was made out. The abdomen showed moderate distention and a large amount of fluid. October 6 the patient complained of dyspnea and great discomfort from a sense of abdominal tightness. An abdominal tap gave 2,500 cubic centimeters of intensely bloody fluid, specific gravity 1.024, 1,250,000 red cells per cubic millimeter, 1200 white cells. Culture showed one colony of micrococcus tetragenous. The patient was given one cubic centimeter of salyrgan intravenously. That night he suddenly became weak, prostrated, cold and sweating. The pulse was 150 and almost imperceptible. The blood pressure was 70/50, the temperature 101°, the respirations 30. Within half an hour the temperature was normal, the pulse 140, the blood pressure 105/70. October 8 the fluid had reaccumulated in the abdomen. The patient again had sudden onset of weakness and faintness with practically imperceptible pulse and a blood pressure of 70 (?)/40, both gradually falling, the pulse rate 140—170—80. That afternoon the patient died.

Clinical Discussion

RICHARD C. CABOT, M.D., TRACY B. MALLORY, M.D., AND GEORGE W. HOLMES, M.D.

NOTES ON THE HISTORY

Dr. Cabot: Of course we think of disease in the liver or the stomach. We might be thinking of the pancreas, but in the absence of a palpable tumor and of marked jaundice we have so far no evidence. So I should think chiefly stomach and liver so far, taking the liver to include the gall bladder. At his age malignant disease is always the first thing we think of.

NOTES ON THE PHYSICAL EXAMINATION

From the heart measurements we are rather dubious whether there is any evidence of enlargement. There certainly is not much.

The fact that the sounds were of poor quality and the apex and aortic sounds were split has no special significance. The systolic murmur at the apex also is nothing we can use for diagnostic purposes.

If this questionable clubbing of the fingers is really present we should expect that the trouble had been going on longer than we should otherwise suppose.

Except for the sugar and rare leukocytes I take it the urine was negative and can be taken as throwing no aspersions on the kidneys.

The blood examination shows a well-marked secondary anemia.

That gastric analysis is within normal limits. There is nothing there to show any evidence of gastric disease.

Twenty-five per cent retention by the liver function test ought to mean organic liver disease.

Have you anything to add, Dr. Holmes, in comment on what was said of the x-ray examination?

Dr. Holmes: I would agree pretty much with what has been said, that is in regard to the very indefinite findings. Spasm and irritability in the gastro-intestinal tract might be due to a number of causes. The Graham test, when we fail to get the gall bladder, provided no mistake is made in carrying out the technique, usually means disease of the gall bladder or limited liver function. To be sure of it I think it always ought to be done twice, particularly in the Outpatient Department, where the patient does not always carry out instructions.

Dr. Cabot: That seems to substantiate what we already have in the liver function test. So I suppose we could put the two together with the palpable tumor supposedly in the liver. In relation to the stomach, it does not show any evidence of cancer? That is what we are after.

Dr. Holmes: No, nothing positive.

Dr. Cabot: The x-ray evidence, then, points to the liver rather than the stomach. It does not point to any other organ we can name in that vicinity, not to the kidney or the colon. So it seems to me it comes down to a differential diagnosis of chronic diseases of the liver on which we may get further light as we go on.

The additional evidence we have while he was in the ward is of shifting abdominal dullness. That points towards stasis and is good evidence of ascites.

DIFFERENTIAL DIAGNOSIS

Before we come to the operation we ought to commit ourselves as to what we think will be

found. We have to consider in our differential diagnosis diseases causing enlargement of the liver with pain in a man of fifty-nine with evidence of destruction of liver tissue or lack of function (the liver function test). There is practically no fever and normal pulse and respirations, so that there is no evidence of any inflammatory condition in the liver. There is slight jaundice, but not marked, not the sort ordinarily going with acute yellow atrophy. It seems to me it essentially comes down to the question between malignant disease and cirrhosis. His habits are said to be good. He rarely used alcohol. To a certain extent that is against cirrhosis. One hesitates ever to make a diagnosis of malignant disease of the liver unless one has evidence of it in some other organ in which it is primary. I cannot see evidence in this kidney to point to primary disease. It might be primary of course in the gall bladder or bile ducts; we have no evidence about that. The gall bladder was not functioning very well, but that might be from other causes. The case does not fit well with any single diagnosis I can think of. It does not seem like cirrhosis or malignant disease. But it seems more like those two than anything else. He has had more pain than most cases of cirrhosis, and they did not find ascites until late in the course. It was not evident at the beginning. Yet on the whole I incline more towards malignant disease than towards cirrhosis.

A STUDENT: Why couldn't that malignancy be primary either in the cystic duct or the gall bladder?

DR. CABOT: That is possible. But then one would expect to feel something there. That disease generally leads to enlarged gall bladder, so that it will be easily palpable. We feel something, but it is out in the flank.

A STUDENT: What caused the enlargement of the spleen?

DR. CABOT: That I cannot answer. Ordinarily we associate that with cirrhosis and not with malignant disease. If I make a diagnosis of malignant disease I do not account for the spleen. If I make a diagnosis of cirrhosis I do not account for so much pain. Neither of the diagnoses seems to be very satisfactory.

A STUDENT: Would cirrhosis plus inflammation of the gall bladder account for everything?

DR. CABOT: I have never seen that combination. I do not know why it might not occur.

A STUDENT: How about chronic cholecystitis?

DR. CABOT: It certainly would not cause most of his symptoms. That is really the same question that was just asked. Cholecystitis might be there in addition to some much more serious trouble, such as cancer or cirrhosis. He may have had cholecystitis also. But the pain that he has had has been pretty far off from the gall bladder. It is not much like the pain we get when a metastatic node stretches the liver capsule in malignant disease of the liver.

A STUDENT: Could it be a subdiaphragmatic abscess causing poor circulation somewhere?

DR. CABOT: The difficulty is that there are no constitutional evidences of abscess, no fever or leukocytosis. We ordinarily have those with subdiaphragmatic abscess. Then too subdiaphragmatic abscess could not cause such pain, including the location of the pain. We should have to suppose a pylephlebitis with it, for subdiaphragmatic abscess would not in itself cause ascites. It might be associated with something else which would.

I do not feel satisfied with my discussion of this case.

Cirrhosis of the liver was the preoperative diagnosis. That is a little surprising. I did not suppose they were still doing exploratory laparotomies on the liver.

DR. MALLORY: Once in a while they go in with the idea that the patient may be benefited by a splenectomy, but usually only in cases in which hematemesis is an important factor.

PREOPERATIVE DIAGNOSIS

Cirrhosis of the liver.

OPERATION

There was free blood lying in the right kidney fossa. Inasmuch as this obviously was coming from the wound edge, the question arose as to whether it was caused by preoperative palpation of the liver.

The patient had an enormously large liver extending from the right kidney fossa well into the left kidney fossa, hard and knobby, the surface bleeding at the slightest touch. The blood was very gently mopped out. As there apparently was no continued bleeding the wound was sewed up tight.

POSTOPERATIVE DIAGNOSIS

Cirrhosis of the liver.

FURTHER DISCUSSION

DR. CABOT: Neither one of the things I have supposed ought to cause free blood in the kidney fossa. That is unexpected to me. The hard and knobby liver means malignant disease. It cannot mean anything else that I know.

DR. MALLORY: The surgeons thought it was cirrhosis even after operation.

DR. CABOT: They certainly described it in a queer way for cirrhosis. Of course if we suppose he has malignant disease of the liver, not knowing yet where it comes from, it is perfectly easy to account for the ascites through the mesenteric and retroperitoneal glands which would probably be there and would disturb the retroperitoneal circulation.

I do not see why they do those cultures on

the abdominal fluid. I do not remember one time when they were of any use.

He died, I should suppose, having some hemorrhage, very possibly from the lesions in the liver.

I still have nothing more to say than I did before operation. It seems to me that the evidence is still for malignant disease from the description given, but I am still bothered as before because I have no primary focus.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Cirrhosis of the liver.

DR. RICHARD C. CABOT'S DIAGNOSIS

Malignant disease of the liver, primary focus unknown.

ANATOMIC DIAGNOSES

Hepatoma with metastases to the left adrenal and the peritoneum.
Toxic cirrhosis of the liver.
Ascites.

Pathologic Discussion

DR. MALLORY: This is a somewhat rare case in that it is a primary carcinoma of the liver, a hepatoma. We have happened to have an unusual number of them in the past four years, five in a thousand autopsies.

It is sometimes difficult to make a certain diagnosis of primary carcinoma of the liver even on histologic examination. If the cells are well differentiated they may be forming bile, and then there can be no argument, for the tumor cell that secretes bile must be a liver cell. That was the case here. The larger portion of the liver was filled with carcinoma. There was also a very large metastasis to the left adrenal gland, completely replacing the gland tissue. That metastatic tumor to the adrenal was bright green, far more jaundiced than any other organ in the body, thus giving us the diagnosis. These cases always have a preceding cirrhosis. I think if the surgeons had given us a little better description of that liver it would have been possible to make the diagnosis. At autopsy we found two definite types of change in the liver. The entire right lobe was filled with grossly nodular white and umbilicated tumor masses. That is obviously the condition which they described. Between the tumor nodules in the right lobe and throughout the left lobe there was also a definite cirrhosis of a finely nodular character. The combination of cirrhosis and tumor is very strong presumptive evidence, when as in this case we have no other demonstrable focus of origin, that we are dealing with primary cancer of the liver. He had numerous metastases in the peritoneum and in the omentum. I do not doubt that it was the peritoneal metastases which were responsible for the blood in the abdominal fluid.

The other organs were all essentially negative except for moderate collapse of the lower lobes.

DR. CABOT: The spleen was large?

DR. MALLORY: The spleen was not very big, only twice the normal size. I think what was felt was probably the left kidney, pushed forward and downward by the tumor in the adrenal. The spleen in itself would hardly have been palpable.

DR. CABOT: The spleen was large because of the previous cirrhosis.

DR. MALLORY: Yes.

DR. CABOT: He must have had that cirrhosis more than five months, don't you think?

DR. MALLORY: Unquestionably for years.

DR. CABOT: So it was an entirely symptomless cirrhosis, as I believe many cases are.

A STUDENT: Was there any pathology in the gall bladder?

DR. MALLORY: No.

I have the record of an older case here, essentially the same picture. There was a perfectly definite cirrhosis there, and also a primary cancer of the liver. These tumors are prone to invade the hepatic veins and often grow in solid masses up the vena cava. I have seen a mass the size of my fist in the auricle of the heart. Fragments breaking off from these tumor thrombi lead to metastases in the lungs quite commonly.

DR. HOLMES: Did I understand you to say that the cirrhosis is an accompaniment of the tumor or the tumor an accompaniment of the cirrhosis?

DR. MALLORY: The cirrhosis always precedes the tumor. So far as I know there is only one other condition in which primary hepatoma has been found except that of a preceding cirrhosis, and that is liver fluke infection in the Chinese. Primary cancers of the liver seem to be common in the Chinese in areas where liver fluke infection is quite common.

DR. CABOT: This is one of the points in support of the irritation theory of cancer, then.

DR. MALLORY: Yes, very definitely.

DR. CABOT: One of the reasons why it does not pay to get cirrhosis is that it may lead you into cancer.

DR. MALLORY: We had one case recently that might have been diagnosed. In that case it was known that the man had had cirrhosis for several years. Then the liver began to enlarge rapidly and he began to get anemic.

DR. CABOT: I am pretty sure we have had more cases at the Brigham and here than we used to have. They used to be extremely rare.

DR. HOLMES: Is cirrhosis of the liver becoming more common, in spite of prohibition?

DR. MALLORY: I should say it is of the same frequency, as far as this hospital is concerned.

DR. CABOT: Statistics show that it is actually getting less common in the United States.

CASE 17182

PYLORIC OBSTRUCTION OF OBSCURE CAUSE

Medical Department

PRESENTATION OF CASE

Dr. Chester M. Jones: This patient was a married American housewife of fifty who was sent to the Baker Memorial by Dr. Hampton, who had seen her outside.

She had vomited off and on for six months. She was perfectly well until six months before entry except that she had had chronic constipation for seven years. Previous to the onset of the present illness she had a great deal of trouble at home and in business which had upset her a great deal. I do not know whether this had any relation to what followed. Six months before entry, however, she began to have attacks of nausea and vomiting, and there was a slight suggestion of coffee-grounds material. She continued to have vomiting at night for the next night or two, accompanied by gastric distention and a good deal of gas. We were not sure whether her statements were entirely accurate. It is of some interest that she had these attacks of vomiting without pain before coming into the hospital. For a six months' period the attacks of vomiting and nausea continued. Her doctor treated her with physics. He finally told her that he did not know what was the matter with her, and suggested having x-rays taken, but she refused. She continued to vomit at night. Another doctor said she had an infected gall bladder and a dilated stomach. He gave her various pills and cathartics. She vomited during the day material which consisted of undigested food. She had a feeling of distress and fullness preceding the vomiting. She went to another doctor who treated her for three months under a diagnosis of tonsillitis. She had her tonsils removed. At this time she had x-rays taken. Dr. Hampton will describe those x-rays later. He did find pyloric obstruction from the very start. She was put on a milk diet, with much improvement and diminution in the amount of vomiting. From December 9 to Christmas she did not vomit at all.

Three weeks before admission to the Baker Memorial she had more nausea and gas, but no vomiting. She had a good deal of distress and a feeling of fullness in the abdomen. Her bowels were regular with milk of magnesia. She again began to vomit sour undigested food. From the beginning of her illness to admission she had lost 50 pounds.

That is her story to admission. At no time was there any pain, no sensation except a sensation of fullness and distention and gas. She very steadily denied ever having had any pain. She had gone from one doctor to another. Only one doctor had suggested gall bladder disease. Another doctor, however, had finally prevailed upon her to have x-rays taken. She had been x-rayed twice before coming to the Baker Memorial.

Her marital history contained a good deal of unhappiness but otherwise nothing of importance.

She thought she had typhoid at seventeen, but she was not sure. There were no other illnesses or operations except tonsillectomy about four months before entry.

She entered the Baker Memorial January 12.

When seen she appeared to be a rather stolid, obviously overweight woman who looked sick. She did not appear as if she were exaggerating any of her symptoms. She talked only of fullness and nausea and vomiting. On physical examination she was still overweight. She must have been a very obese woman before she lost the 50 pounds. Her color was very good. She was not uncomfortable as she lay in bed. Her teeth were bad. Abdominal examination showed slight tenderness in the right upper quadrant. The liver was not felt. Everything else was essentially negative.

When she entered she had slight elevation of temperature and pulse. She was obviously dehydrated. The x-rays that Dr. Hampton took show that the barium did not go through the pylorus.

We thought she was in such bad shape that we gave her clyses the night of admission and several days thereafter in order to get her into better condition before attempting anything. The first night she had a gastric lavage. 400 cubic centimeters of dark green bile-stained material was removed from the stomach, showing a total acidity of 50 cubic centimeters and a negative guaiac. It was rather difficult to see why she had all that bile in the stomach contents if there was complete pyloric obstruction. We did another gastric lavage the next day and took out 660 cubic centimeters of material, 350 the next day, 280 the next, then 720, 510 and 700 cubic centimeters, and on the twentieth—operation was done on the twenty-first—she had two gastric lavages of 300 and 400 cubic centimeters, yet not all of the stomach contents were removed. When she came in she was very much dehydrated. Her non-protein nitrogen was 73 milligrams per 100 cubic centimeters and her chlorides were down to about 400 milligrams per 100 cubic centimeters. She was given clyses of 2.5 to 5 per cent glucose. Just before operation the chlorides went up to low normal and the non-protein nitrogen and serum protein were also normal.

She was x-rayed just prior to operation.

"There was a large six hour residue in the stomach. The head of the motor meal was in the small bowel. During the course of the fluoroscopic examination no barium was seen to

pass through the pyloric valve. Films were taken about thirty minutes later which also failed to demonstrate that barium had passed through the pyloric valve. A satisfactory examination of the stomach was possible at this time and no lesion was found up to the region of the pyloric valve. At six hours there was a small quantity of barium apparently in a deformed duodenum."

Previously, as I understood it from Dr. Hampton, he was unable to get any accurate idea of the pyloric end of the stomach. This was the best view he had had. Previously I think he was not able to show any barium at all going through to the intestine. The fact that at this time, at the end of six hours and thereafter, some barium did go through the pylorus explained why there was bile in the gastric contents, yet under the fluoroscope it was impossible to push any barium through.

The other laboratory findings are not of great importance. She had a red blood cell count of 4,000,000, a little low, and a white cell count of 20,000 which came down to normal. The urine was negative after she had been in the hospital for a short time. The albumin present at first was largely due to dehydration. At entry there were hyalin and granular casts. As she became better hydrated the albumin disappeared, until before operation there was only the slightest possible trace and a rare cast. So the renal situation did not interest us at all. The results of an enema failed to show a positive guaiac.

I felt before operation that she had almost complete pyloric obstruction. But what I could not explain was the short history and the absence of pain. One can have ulcer with only a six months' story, but it is uncommon at this age. There was never any pain. Ulcer, however, seemed the most logical diagnosis. There was no question in my mind but that she had pyloric obstruction and should be operated upon for that. During the nine days between the time she came into the hospital and the time Dr. Young operated on her she improved clinically very remarkably. She came with a slight elevation of temperature. The pulse dropped off and the temperature came down to normal. She seemed to be in really good condition for operation and the indications we thought were perfectly definite for surgery.

Dr. Aubrey O. Hampton: The first time I saw this lady I was surprised to see her stomach so large and full of food. She looked fat and fairly healthy. I tried for thirty minutes to force barium through the pylorus and could not. That, I think, was about a month before she came into the hospital. I examined her two weeks later after she was on the diet. The stomach was smaller at that time, but I could not demonstrate the pylorus at all. At the time she was examined in the Baker Memorial the stomach had been pumped until I could see the gastric rugae. Peristalsis was more active. We could examine the stomach down to the pyloric valve, but I could not find the valve. This film was taken about thirty minutes after the examining meal, and as you see not a drop of barium had come through the valve.

Dr. Jones: Probably if we had x-rayed her on the day of entrance she would have had a stomach twice as large as that. The reason you were able to see so well was due to a gastric lavage just before the barium was given.

Dr. Hampton: This film was taken at six hours. It shows a small quantity of barium apparently in a deformed duodenum. I took that small stream of barium as the pylorus and deformed duodenum.

Dr. Jones: Dr. Young, will you tell us about the operation in this case?

Dr. Edward L. Young, Jr.: The short duration of her symptoms of course at her age more than with a younger person raises the question of carcinoma, so that when the abdomen was opened and my hand was in there I felt for that very carefully. The appearance of the thing was of inflammation because of the slightly edematous, very red, dense adhesions. The duodenum was held up to the liver and to the gall bladder very firmly by those adhesions. It did not feel carcinomatous at all. There were no glands. The indications seemed to be perfectly definite pyloric obstruction. Regardless of whether it was inflammatory or malignant, with her condition the first thing to do was of course drainage. So I did an easy posterior gastroenterostomy, short loop. Because of one large surface vessel I did a vertical stomach stoma.

What I think is most important in the gastroenterostomy is to try to do it in such a place and in such a fashion that when you have finished you leave the jejunum in the same or nearly the same position as when you started. That was true, as far as I could see, here.

She vomited large amounts of bile-stained fluid the next day. Then there were two or three days when the vomiting was practically nil. Then she started to vomit what was definitely intestinal contents. I could see no reason at all for this. On the twelfth or thirteenth day she also ran a temperature again, with no cause that we could find. The burden of proof always being on the surgeon, I tried to find some cause of sepsis in the operation. Dr. Jones could not find anything in the chest. At length the temperature came down and she did fairly well until the twelfth day. That night she suddenly began to vomit a great deal more. It seemed to me that we had to go in for intestinal obstruction under spinal anesthesia.

The stoma was apparently perfectly normal, not indurated. There was no edema or dilatation of the jejunum above or below the stoma, no intestinal obstruction. We did a jejunostomy.

She went a downhill course with a very high temperature. Before she died her pulse went up. There was obliteration of the liver dullness and what looked like a widespread peritonitis. We wondered whether there had been a perforation of an ulcer from the additional handling or just what had caused it. There were no other changes until the pathologist told us at autopsy just what it was.

I think these malfunctioning posterior gastro-enterostomies are very puzzling. If anybody can give any reason for a malfunctioning gastro-enterostomy it would be a great help to know what it is. You may upset the physiology so that though there is no anatomic obstruction in the stoma, the stoma does not work. I think this woman died of a malfunctioning posterior gastro-enterostomy, but I do not know even in the face of the autopsy why it was malfunctioning.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Obstructing duodenal ulcer.
General peritonitis.

ANATOMIC DIAGNOSES

1. *Primary disease.*
   Chronic cholecystitis.
   Cholelithiasis.
2. *Secondary or terminal lesions.*
   Fistula between the gall bladder and the duodenum.
   Intestinal obstruction due to kinking of the duodenum.
   Obliteration of the common bile duct.

Pathologic Discussion

Dr. Tracy B. Mallory: I cannot throw any light on the immediate cause of death, nor can I explain why the intestinal tract did not function. The primary pathology, however, the cause of her pyloric obstruction, is perfectly clear. She had a very small contracted fibrous gall bladder in which were several stones, and a patent fistula between the gall bladder and the duodenum. About the duodenal end of the fistula the intestinal wall did not seem to be indurated. The question arises whether a duodenal ulcer perforated into the gall bladder or whether an empyema of the gall bladder perforated into the duodenum, as in the two cases we discussed here three weeks ago. The anatomic findings are consistent with either hypothesis. The fibrous process around the gall bladder had pulled the duodenum up, kinking it very sharply. That apparently was the sole cause of obstruction, which was practically complete, so that only a very fine probe would go through. There was no secondary dilatation of the bile ducts within the liver, but the common bile duct was completely obliterated by the scar tissue.

Dr. Jones: Looking back, I think there is one thing that is of interest. That is that she had all this obstruction without pain. I think it is unusual to have an ulcer of the pylorus without any pain at any time. It was apparently a purely mechanical affair due to kinking of the duodenum. Just a week ago Dr. Young and I had a case with similar findings, although not such complete occlusion of the pylorus, and here again no pain, but nausea, vomiting and distress. Why this woman died is most puzzling. She had a mild upper respiratory infection, and was nauseated and vomited frequently from trying to cough and get rid of this material from her nasopharynx. I hoped we might find at autopsy more evidence of serious upper respiratory infection, but we were unable to demonstrate any such thing.

Dr. Mallory: Have you any further comment, Dr. Hampton? Do you think that that little bit of barium that you saw beyond the pylorus might have been in the gall bladder?

Dr. Hampton: I have seen only one case of this kind before that I could demonstrate by x-ray. In that case the gall bladder filled well and one could demonstrate its pyriform shape. I think that if it had been possible to fill the gall bladder in this case I should have done it during these three examinations. I spent considerable time in trying, but it did not fill.

Dr. Mallory: It was so small and packed with stones that there was not much space into which to get barium.

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THE HISTOLOGICAL GRADING OF CARCINOMATA

WHILE the first efforts at systematic estimation of the degree of malignancy[1, 2] of carcinomata aimed chiefly at establishing the prognosis for the individual patient, with the passage of time a by-product which may prove to be even more valuable has appeared. The emphasis is now shifting, on the basis of studies by Ewing[3] and others, to the use of grading as a guide to therapeusis, particularly as indicating the radiosensitivity or radioresistance of a given type of tumor.

With the growing availability of radium and deep x-ray therapy, the application of the various methods at our disposal to the tumors which will most readily yield to them is of greatest importance. Therapy should be based not on the availability of type of treatment, but on the probable response of any particular tumor to the therapeutic agent.

While this new and very useful field has been developing from the earlier work, there has been some criticism of the prognostic value of grading, and this is justifiable, particularly if an attempt is made to apply the results to individual cases. It is one thing to say that in 90% of the cases a given type of cancer will remain localized; but quite another to say it will remain localized in patient A.

Studies of certain groups of cases, as the work of Reimann on cancer of the breast, showed that the various classifications are still open to question, although in other groups, such as the epidermoid carcinomata, the results are very satisfactory. From the statistical standpoint, systematic grading is of great service. However, its rigid application to the prognosis for a given case is subject to so many variables as to vitiate materially its value.

Interestingly enough, as the prognostic value of grading has decreased, its value as an index to therapy has increased.

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COMMUNITY RESPONSIBILITY FOR CHILD HEALTH

IN the issue of the *Journal* for March 26, 1931, we commented editorially on the significance of National Child Health Day which is held annually on May 1 under the auspices of the American Child Health Association. In this connection, Dr. LeRoy A. Wilkes, director of the Division of Medicine Service of this Association, has recently called renewed attention to the appalling wastage of maternal and infantile life in the United States. At the latest White House Conference on Child Health and Protection, it was stated that in 1929 15,000 mothers lost their lives in this country at childbirth; there were in that year, 85,600 stillbirths, and 80,000 infants born alive died within one month. Doubtless, a large percentage of these deaths should have been preventable. The maternal mortality alone is greater than that which occurs in twenty-five of the other large nations of the world.

In the issue of the *Journal* for January 29, 1931 we commented editorially on the importance of care during pregnancy as a means of reducing maternal morbidity and mortality at childbirth. In addition, Dr. Wilkes emphasizes the necessity of improved medical education, improved facilities for the care of patients of moderate means, and community provision for the supervision, feeding, and care of infants and children, pointing out that to obtain these desiderata is largely within the power of most communities and depends chiefly on the awakening of community consciousness and coöperation. He advocates the initiation on May Day of an intensive plan to organize the agencies

to render such service to individual families, to neighborhoods, and to the larger community units. He makes the significant statement that, "The Nation can well afford to subsidize the births of its children."

Though all will agree on the general desirability of such a program, ways and means of its accomplishment must necessarily be of gradual growth. Already, many agencies are working towards the desirable end in view. At least the public conscience is slowly awakening to the importance of safeguarding in every way maternal and infantile life; and upon this consciousness, upon the education which physicians can gradually diffuse among the laity, and upon the coöperation of all must depend its ultimate attainment.

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CONTAINS articles by the following named authors:

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COLBY, FLETCHER H. B.S., M.D. Harvard University Medical School 1918. Associate Urologist, Massachusetts General Hospital. Surgeon to Out-Patients, Palmer Memorial Hospital. Assistant Urologist, Huntington Memorial Hospital. Assistant in Genito-Urinary Surgery, Harvard Medical School. His subject is: "Patent Urachus. Report of a Case." Page 900. Address: 6 Commonwealth Avenue, Boston.

MIDDLETON, RICHARD P. M.D. Harvard University Medical School 1927. House Officer, Pennsylvania Hospital 1927-1929. Surgical Resident, Memorial Hospital, Worcester, Mass. 1930. Assistant Resident in Urology, Peter Bent Brigham Hospital 1930-1931. His subject is: "A Case of Pyometra in a Male Pseudo-Hermaphrodite." Page 902. Address: Peter Bent Brigham Hospital, Boston.

BARNEY, J. D. A.B., M.D. Harvard University Medical School 1904. F.A.C.S. Chief of Service, Urological Department, Massachusetts General Hospital. Assistant Professor, Genito-Urinary Surgery, Harvard Medical School. His subject is: "1. Pyonephrosis Resulting From an Aberrant Renal Artery. 2. A Case of Encapsulated Papillary Adenocarcinoma of the Kidney." Page 904. Address: 87 Marlborough Street, Boston.

KEYES, EDWARD L. Ph.D., M.D. Columbia University College of Physicians and Surgeons 1895. F.A.C.S. Professor of Urology, Cornell University Medical College. Urologist, St. Vincent's Hospital. Consultant to Bellevue and Memorial Hospitals. President, International Urological Society and of the American Social Hygiene Association. His subject is: "The Preventable Infections Incident to Preparing a Prostatic for Operation." Page 906. Address: 121 E. 60th Street, New York City.

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GRUND, J. L. M.D. Harvard University Medical School 1921. Assistant in Dermatology and Syphilology, Massachusetts Memorial Hospitals. Instructor in Dermatology and Syphilology, Boston University Medical School. Address: 483 Beacon Street, Boston. Their subject is: "Progress in Dermatology." Page 925.

THE BOSTON MEDICAL LIBRARY

ROBERT KOCH

1843-1910

IN spite of the fact that the fight against tuberculosis has resulted in a remarkable reduction in the mortality of this menace to mankind it will probably be many years before its rating in tables of vital statistics will be classed as a lowly one, and the name of Robert Koch will always be identified with the beginnings of improvement in records of this disease. Not only should he be remembered for his specific contributions to the placing of this dread malady among the list of curable (because preventable)

afflictions, but because the methods which he employed in bringing this about virtually elevated the science of bacteriology to a plane whence many discoveries of almost equal importance to the human race have been made possible. Nothnagel, years ago, gave expression to this idea. Another suggestive thought, brought up by a consideration of Koch's life work, is the fact that it was while he was engaged in a country practice that he instituted the research out of which was eventually developed modern methods in the recognition and treatment of this disease, a fact which should encourage clinicians to approach their work with a scientific spirit, for many most important discoveries have been made outside the laboratory, by those who brought to the bedside a trained and observing mind. Robert Koch was born in Clausthal, Hanover, on December 11, 1843. He was the third son in a family of 13 children. He was educated throughout the secondary school period in his native town. When it was time for him to go to the University he enrolled at Göttingen where he remained from 1862 to 1866. From there he went to Hamburg as assistant physician to the hospital in that city. He started independent practice in two towns where he did not long remain, but in 1872 he located in Wollstein, Province of Bomst. This was a small, isolated community where he had few opportunities to come in contact with scientific workers except through correspondence and of this method he made full use. He was strongly influenced in his studies by Jacob Henle who had, in 1840, propounded a theory of contagion. He carried on an active exchange of ideas with Ferdinand Cohn and other scientific men at Breslau, kept up his studies with the microscope and culture media, and in 1877 astonished the scientific world by publishing a complete record of the life history of the anthrax bacillus. Up to that time, though there had been a good many close guesses as to the nature of contagion, no one had come out with valid and demonstrable proofs. Henle, in 1840, without the aid of a microscope had, to be sure, given a surprisingly accurate description of the rôle played by micro-örganisms in infectious diseases and, as has been said, it was this work that seems to have attracted Koch to cultivate this field.

Studies upon the fungi of plants and insects had set men thinking. Bassi, in 1835, had discovered the origin of a fatal disease among silkworms known as muscardine. Tyndal, Cohn, Pasteur and others had proved that the air was full of germs and out of investigations of this sort came, eventually, the work of Pasteur and Pouchet on fermentation. It was not however until Koch, working with the microscope and cultural methods by which organisms could be planted and grown on nutrient media, that the speculations and suspicions of others became assured facts. It was one of the outstanding features of all Koch's researches that he was not satisfied short of absolute proof. In 1878 he published his second *arbeit*, upon the "Etiology of Diseases Caused by Wound Infections." Incidentally as he worked over these problems he made numerous technical modifications of the microscope which rendered it more perfect for the study of the minute organisms which were the subject of his enquiry. The bearing upon public health problems of the work in which he had been engaged soon became apparent and it was not long before he was called to become a member of the Imperial Board of Health. On March 24, 1882 he presented to the Berlin Physiological Society his first communication on the tubercle bacillus. Because of the prevalence of tuberculosis and its high mortality, the recognition of its chief causative factor has been looked upon as the greatest of his discoveries. In order that he should be able to bring out the conclusiveness of his proof of the pathogenicity of the tubercle bacillus it was necessary that he should be able to stain the organisms in situ with a dye that would color nothing else in that tissue. This he was enabled to do. Another step in the establishment of the identity of the tubercle bacillus was the preparation of solid media upon which they could be made to grow. Before that time other investigators, as Pasteur and Klebs, had employed liquid culture media. It was in part through this discovery that he was enabled to study the morphology of the tubercle bacillus. A third step in the establishment of his thesis was the production of tuberculous lesions in animals by transplantation of the organism from culture media to the given animal and subsequent recovery from that animal of organisms with the same morphological characteristics. Once this was done Koch was satisfied that proof had been adduced of the specific cause of this disease. The presence of tubercle bacilli in human sputum and the existence of tuberculosis in milk-producing cattle were but inevitable sequels of Koch's pronouncement as to the cause of the disease.

In 1883, after a ten-year truce, cholera again threatened Europe, making its appearance in Egypt and certain of the Mediterranean ports. Several scientific expeditions were equipped and sent out to study the disease, the one under the auspices of the German government being headed by Koch. He carried on his investigations in Egypt and later continued them in India, stopping on the way at Damietta, an important quarantine station on the Red Sea, where the epidemic started. Koch and his associates took their lives in their hands no less courageously then did "shock" troops in the great war, who were tolled off to storm an enemy's entrenched position. They went from hut to hut in the most squalid Hindoo settle-

ments, performing autopsies and gathering materials for the prosecution of their investigations. It was in recognition of the triumphant accomplishment of their attempt to turn back the threatened advance of the dread epidemic into Europe by the German authorities, that upon Koch's return in 1884 special decorations were awarded the members of the commission which they were permitted to wear as were those so decorated for exceptional bravery in action upon the battlefield. Though he discovered the cholera bacillus and established methods of study by which its identity could always be determined there was necessarily one step lacking, which was present in his tuberculosis research, and that was the inability to reproduce the disease in susceptible animals. Up to this demonstration the proof was convincing.

Shortly after his return from India, steps were taken to connect Koch with University teaching and in time a place was made for him by the establishment of the Hygiene Institute of Berlin, a department of the University, and it was here that the remainder of his work was carried on and to it students from all over the world came to be trained in the methods which he had perfected. Many and varied were the researches inspired by him and carried through at the Institute. Malaria, Texas Fever, Rinderpest, Erysipelas, Typhus and Sleeping Sickness are a few of the diseases, to a better understanding of which we are indebted to Koch and his school. A long list of distinguished names might be appended to indicate how widespread was the influence of the master mind upon his pupils, who, inspired by him, carried on his teachings in their own constructive works.

Among these are: von Behring, noted for his work in serum therapy; Ehrlich, a pioneer in Chemotherapy; Pfeiffer, who identified the influenza bacillus; Wassermann, whose contributions to the serum diagnosis of syphilis have made his name almost a household word in medical circles and Kitasato, the distinguished Japanese scientist. Arterial changes, the almost invariable accompaniment of hard work, began to show themselves while he was in East Africa engaged in his studies upon sleeping sickness, three or four years before his death. Early in May 1910 he had an acute attack of angina and sought relief at Baden-Baden but was there only a short time when death overtook him, on May 27, 1910. He was buried at the Institute with which he had had so long and so distinguished a connection.

MISCELLANY

PUBLIC HEALTH IN ISLESBORO, MAINE

Dr. N. Barker of Dark Harbor, Islesboro, reports that there are no nurses on the island and no automobiles are permitted. He has secured remarkable results in public health work. His accomplishments include free noonday school luncheons, health talks, an anti-cigarette campaign, first aid treatment, free dental service to 75 worthy pupils, free skin test diagnoses for hay fever and asthma to all citizens of the island together with the teaching of artificial respiration in the schools, free health speakers and a free hospital service all within a few years.

GREAT BRITAIN'S LOW DEATH RATES

The British Registrar-General reports that provisional figures for 1930 indicate an infant mortality rate of 60 per 1,000 live births, the lowest ever recorded for England and Wales. This is 5 points below the previous minimum, recorded for 1928, and 14 points below the rate for 1929. The general death rate also was the lowest on record. The birth rate remained the same as for 1929—16.3 per 1,000 population—the lowest recorded.—*U. S. Children's Bureau.*

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR MARCH, 1931

The total number of reported cases of communicable disease for March 1931 was 9572. This is some three thousand less than for the corresponding month last year, chiefly due to a falling-off in the reported cases of measles, whooping cough and mumps.

Three cases of anterior poliomyelitis were reported in March of this year as against the usual one case reported in March 1930.

Two hundred and one cases of diphtheria were reported forming the lowest total for March to be found in twenty-five years of records.

Only eight cases of epidemic cerebrospinal meningitis were reported, suggesting a still further falling-off in the prevalence of that disease.

Two thousand and twenty-three cases of measles were reported in March of this year representing a falling-off of seventeen hundred cases from the number reported in the corresponding month the preceding year.

Lobar pneumonia, pulmonary tuberculosis and other forms of tuberculosis have about the same figure that they have had for many years past at this season.

One thousand six hundred and thirty-seven cases of scarlet fever is the largest number reported in March since 1927, when the disease was markedly prevalent.

The record of nine cases of typhoid fever equals the low figure for March set in 1930.

Whooping cough with eight hundred and seventy-seven reported cases is likewise encouragingly low.

Chicken pox was reported one thousand and fifty times; German measles four hundred and eighty-three times and mumps six hundred and eighty-three times. These are close to the average figures of seasonal prevalence for these diseases.

But sixty-five cases of influenza were signalized,

not far from the lowest number reported for March.

Four hundred and twenty cases of syphilis is among the highest reported number of cases. Five hundred and fifty cases of gonorrhea is about the usual number reported for March. It must be borne in mind that but one-third of the physicians, who would be expected to report gonorrhea and syphilis actually do so, and that both of these last two figures should be considerably higher.

RARE DISEASES

Anthrax was reported from Greenfield, 1.

Anterior poliomyelitis was reported from Boston, 2; Lowell, 1; total, 3.

Encephalitis lethargica was reported from Adams, 1; Arlington, 1; Boston, 1; Haverhill, 1; Needham, 1; Quincy, 1; total, 6.

Epidemic cerebrospinal meningitis was reported from Boston, 2; Cambridge, 1; Medford, 1; Reading, 1; Southwick, 1; Springfield, 1; Webster, 1; total, 8.

Rabies was reported from Millbury, 1.

Septic sore throat was reported from Beverly, 1; Boston, 12; Brookline, 1; Fall River, 1; Greenfield, 1; Lakeville, 1; Lowell, 1; Malden, 1; Marshfield, 1; Northampton, 4; Quincy, 1; Watertown, 1; total, 26.

Trachoma was reported from Boston, 3.

Trichinosis was reported from Boston, 1.

Undulant fever was reported from Framingham, 1; Greenfield, 1; Salem, 1; total, 3.

MONTHLY REPORT OF CERTAIN COMMUNICABLE DISEASES

	Cases in Entire Pop.				Case Rates per 100,000 Pop.		
	Mar. 1931	Mar. 1930	Proso. Index*	Epi. Index†	Mar. 1931	Mar. 1930	Expected Rates‡
All Causes	9572	12249	—	—	223.9	287.9	—
Ant. Polio.	3	1	7	.4	.1	.02	.2
Diphtheria	201	278	371	.5	4.7	6.6	8.7
Ep. C. S. Men.	8	24	5	1.6	.2	.6	.1
Measles	2023	3798	4415	.5	47.3	89.3	103.2
Pneu. Lobar	410	676	583	.7	9.6	15.9	13.6
Sc. Fever	1637	1176	1321	1.2	38.3	27.6	30.9
Tbc. Pul.	467	467	409	1.1	10.9	10.9	9.6
Ty. Fever	9	9	17	.5	.2	.2	.4
Wh. Cough	877	1503	1700	.5	20.5	35.3	39.8
Chicken pox	1050	974	—	—	24.6	22.9	—
German Measles	483	540	—	—	11.3	12.7	—
Gonorrhea	550	574	—	—	12.9	13.5	—
Influenza	65	50	—	—	1.5	1.2	—
Mumps	683	1022	—	—	16.0	24.0	—
Syphilis	420	415	—	—	9.8	9.8	—
Tbc. O. Forms	63	45	—	—	1.5	1.1	—

*This index is an attempt to estimate the number of cases based on the trend during the past years which can be expected to occur, and is for the purpose of comparison with the number of cases which actually did occur.

†This ratio expresses how prevalent the disease is compared with the index mentioned above: 1.0 indicates that the actual number of cases equals the expected number. A larger number means a greater prevalence, and a smaller number a lesser prevalence than expected. Thus, 2.0 would indicate twice the expected number of cases, and .5 half the expected number of cases. The method used to determine the indices is described in the August 18, 1927 issue of the *Boston Medical and Surgical Journal*.

‡Calculated from the Prosodemic Index.

A BROADCASTING MESSAGE BY THE STATE DEPARTMENT OF PUBLIC HEALTH

WHAT A PARENT SHOULD KNOW ABOUT MEASLES

E. H. PLACE, M.D.

In considering what a parent should know about measles, we find two conflicting answers:

1. That a parent should know all important facts about this dangerous and common disease of childhood.

2. That a parent should know *only enough* to call a competent physician at the first sign of anything wrong with the child's health.

Given the proper motives, which are here unquestioned, we believe that the more true knowledge a person has the better for society; otherwise these broadcasts would not be made. It may not be amiss, however, to caution people to keep in mind the difference between planning for the future and worrying about it. The former makes life safer and richer but the latter is destructive of judgment and peace of mind. To those who only worry when possible dangers along their path are shown them, ignorance is certainly bliss.

Practically every person contracts measles, usually in childhood. About the only children who escape are those living in the greater seclusion of farms and country homes.

The death rate is considerable but is largely in children below three years of age and in those of poor condition. There has been no striking change in the death rate curve in many years.

*Broadcast March 11, 1931.

One attack of measles protects for life in a very high proportion of cases. Supposed multiple attacks which are so commonly believed in by people, are usually due to confusion of other eruptions. Babies under six months have a high immunity and rarely contract the disease. This protection is lost toward the end of the first year, and the child then remains susceptible until he contracts measles no matter what the age. In those few places where measles has been absent for generations, as in the Faroe Islands, epidemics of measles involve all ages, grandparents as well as the children.

Protection against contracting measles is not related to general health; the strongest, healthiest children contract the disease as easily as the sickly ones but they usually do better.

Now, as to the nature of measles: It is caused by an organism too small to be seen with our present microscopes and called a filterable virus. This virus is present in the blood very early in the disease and in the secretions of the nose and throat and probably the eyes during the acute stage. It does not live long after it leaves the body, dying in a few hours unless under especially prepared conditions.

Measles starts with symptoms of a cold and for three or four days it would seem to be nothing more, sometimes severe and sometimes trivial. The patient usually feels tired and in some cases the cough is harassing.

The rash comes on the face after three or four days of this apparent cold, and progresses downward during the next two to four days. At first, it consists of small raised spots. These increase in number rapidly and grow larger becoming irregular in shape, size and arrangement. In marked cases the whole skin is red from running together of the spots but usually the coarse blotchy character may be seen, the skin between the macules remaining white and contrasting. As the rash spreads downward, the highest intensity is reached successively on the face, trunk, arms and legs.

There is a fever, from the beginning of the cold stage, usually slight at first and this increases during the rash period. When the rash reaches its height on the face at about the third day the fever usually suddenly drops and the patient feels rapidly better, if no complications have occurred. At this time the red spots usually change in color to a mahogany due to hemorrhage into them and fading. They then do not fade on pressure; this is the pigmented stage.

During the illness, coughing, sneezing, watery and red eyes, sensitiveness to light, tired feeling and general discomfort are usually present and often very marked. In occasional cases, other and alarming symptoms appear especially connected with the brain. The throat is often somewhat sore but this is not usually marked.

The harm of measles is due not directly to the disease but to other bacteria which attend or follow its course. The most important of these is the streptococcus.

The most important damage is to the lungs leading to pneumonia which is the cause of death in 98% of the fatal cases. Pneumonia usually appears before the fading of the rash so if the patient safely passes by this period, the danger is slight.

Next to pneumonia in importance comes infection of the ears called otitis media. This is the most common complication although much less serious than pneumonia. Infection of the ears frequently extends back into the bone behind the ear or the mastoid and the chief danger, in such cases, is that the infection may spread farther into the big vein under the mastoid inside the skull or into the membrane surrounding the brain. Both these dangers can be largely prevented by prompt and skillful treatment.

Infection of the mouth occurs often but is usually not serious and responds well to treatment. One form of infection, a gangrenous form called noma, is very serious and requires prompt and radical treatment if the patient is to be saved.

Trouble with the eyes in measles is greatly feared by most parents but it is only rarely a serious possibility. The serious trouble is ulcer of the clear part of the eye or cornea. Such ulcers bring danger of infection inside the eye and always danger to the sight. For our comfort, it should be said that this happens rarely and is almost entirely preventable. The eyes are usually reddened and watery and often sensitive to light but this is of little significance. Light does not harm the eyes nor is it likely to be unpleasant if sudden strong changes are avoided. It is not desirable to keep measles patients in dark rooms. Pus infection of the eyes is one of the most common complications but rarely does this conjunctivitis cause harm if promptly and well treated.

One of the important effects of measles is to increase the danger of tuberculosis. When there is a quiescent tuberculosis, measles is very apt to start it up actively and even in a rapidly fatal form.

Measles is very contagious so that even a short time in the near vicinity of an acute case is sufficient to contract it. Patients are contagious as soon as the first sneeze or cough or redness of the eyes and are more contagious before the rash than after it appears. They are never contagious after the rash fades distinctly, a total period of not longer than two weeks.

The contagious material or virus is in the secretions of the nose and throat and probably the eyes and is spread by these. Coughing and sneezing may throw this contagious secretion out several feet and in wind currents many feet so that the disease may be contracted without actually touching the person spreading it. The virus persists, however, only a short time, one to two weeks and disappears even if the discharges continue from secondary infection. This is just the opposite from scarlet fever and this difference often leads to much misunderstanding. As the virus lives only a few hours outside the body, infected objects are a

source of danger only slightly and never for more than twenty-four hours probably, again differing greatly from scarlet fever.

In the treatment of measles, it is well to remember that the greatest danger is pneumonia. All details of management should thus be planned for the prevention of pneumonia or if this cannot be done, for its favorable handling. A light, sunny room, well ventilated, not hot; uniform rest in bed with light covering, just sufficient to keep the patient warm; a large supply of water and fluids and an easily digested diet of milk, soups, cereals, cooked fruits and sugar should be secured. There is no ground for the common fear of cold water to drink nor cool sponging. Prolonged chilling of the body is bad, but a short cool sponge improves the reaction of the blood vessels.

The eyes should be kept clean with warm boric acid solution and pure vaseline or a suitable ointment to the lids; if purulent eye infection occurs, the treatment should be very careful and strict under a physician and ulcer of the eye calls for an eye specialist.

The mouth may be kept clean with mild washes, like boric acid. Ulcerations require too special treatment to consider here.

Coughing usually requires some medication and sleeplessness and restlessness may require medicine.

It is important for people in contact with measles patients to avoid carrying their own throat and nose secretions to the patient in coughing, talking, etc. This is especially important if these persons have any infection, as colds or tonsillitis.

In rare cases of measles an infection of the larynx may occur with a croupy cough and increasing obstruction to breathing. This requires prompt treatment and usually sending to the hospital.

Prevention of measles has not yet reached a satisfactory stage. It is difficult to keep away from measles cases as at the beginning the symptoms are only those of a cold and such patients are apt to go about for several days, very contagious, without appreciating its significance. The physician can usually distinguish this from other colds, if he is called, by little spots inside the mouth. It is certainly very desirable to keep children, at least if under three years old, away from everyone with a cold.

For children who are known to have been exposed, protection can be given. This is by serum of convalescents. The protection lasts, however, only for one or two weeks and is not available for general immunization. All children under three years of age and those who have tuberculosis, ear infections or lung infection or who are below par should be protected when exposed if possible. If no convalescent serum can be secured, the blood of the father or mother or other available person who has had measles, even years before, may be used in larger amount. There is no reaction.

When children older than three years, who are not suffering from other diseases, are exposed to measles, it is better to only partially protect them by giving small doses or giving it six or seven days after the first exposure. This allows the measles to develop in a mild, modified form which is practically free from danger and thus protects for life.

Measles should not be confused with that different, though similar infection, called German measles, a better name for which is rubella. Rubella is entirely free from the dangers which at times so seriously affect measles patients but it appears in forms very difficult to distinguish from measles.

Measles occurs in every generation and has done so since the middle ages at least, so that few diseases have developed in their train so many illogical traditions of management. These are rapidly disappearing under the light of scientific study.

CORRESPONDENCE

AN APPARENT ERROR IN OUR EDITORIAL ON "OBSTETRICS AT THE BOSTON CITY HOSPITAL"

April 25, 1931.

The Editor, *New England Journal of Medicine:*

May I call your attention to an apparent error in your editorial entitled "Obstetrics at the Boston City Hospital" in your issue of April 23, 1931?

You state "In the year 1930 there were nearly 1800 deliveries, approximately one-tenth of the total number of births in the city of Boston, and more than occurred in any other institution." In the Boston Lying-in Hospital, there were during 1930, 1,958 births and 1,103 births in the Out-Patient Department of the same institution. At the Richardson House, which is the private wing of the Boston Lying-in Hospital, there were 775 deliveries, making a total of 3,836.

Sincerely yours,

F. C. Irving, *Visiting Obstetrician,*
Boston Lying-inHospital.

GOODBYE TO THE TROTULA MYTH

Mr. Editor:

Who has not heard of Trotula, the great and original gynaecologist of Salerno? In a book on "Famous Midwives" published a number of years ago, there is quite a detailed account of her, and if my memory serves me correctly, also a picture. The undersigned (among others), has been guilty of a medical history note on this famous woman. Charles Singer, in "From Magic to Science" (Boni and Liveright, New York, 1928), neatly punctures the Trotula bubble. The quotation follows: "A lady of Salerno, known as Trotula whose life course is placed in the early eleventh century, is said to have been the authoress of the only two books by Salernitan women that the ages have spared to us. Her name passed long ago into the fairy-tales as *Dame Trot,* and has been known in every nursery for four hundred years.

Alas! she had no real existence. The treatises by the so-called Trotula are in fact compilations from sources far more ancient than the Middle, or even the Dark Ages. The very name *Trotula* is due to a misunderstanding. One Trottus, indeed, there was, a doctor of Salerno and a mere male. His works, or rather his compilations, were spoken of as the *Trotula*, according to a common habit of the Italian schools. As these works happened to deal with aspects of women's life, and contained something of the 'Peeping Tom' about them, they were naturally mothered on a woman. The situation is not devoid of humor—and thus fades into nothingness the first woman professor whose life a learned medical historian once essayed to write!"

Yours truly,

WM. PEARCE COUES.

April 20, 1931.

NOTICE

THE STUDENTS OF TUFTS COLLEGE MEDICAL SCHOOL TO HAVE A DINNER

The students of Tufts College Medical School will hold a dinner at the University Club Monday, May 4, 1931, at 6:30 P. M. The heads of the various departments of the school will be present and will speak briefly. It is hoped that many alumni will attend. The toastmaster will be Dr. Thomas J. O'Brien, Associate Professor of Medicine.

REPORTS AND NOTICES OF MEETINGS

MASSACHUSETTS TUBERCULOSIS LEAGUE—ANNUAL MEETING

The eighteenth Annual Meeting of the Massachusetts Tuberculosis League was held at Hotel Bancroft, Worcester, on Monday, April 13, 1931. An audience of 100 composed of representatives from the twenty-eight affiliated organizations throughout the State participated.

The morning session consisted of the annual presidential address given by Dr. Frederick T. Lord of Boston and reports from Frank Kiernan, Executive Secretary, Miss Jean V. Latimer, Educational Secretary and Arthur Drinkwater, Treasurer.

At the meeting of the Corporation which followed the morning exercises, Officers for the year 1931-32 were elected as follows: Honorary President, Dr. Edward O. Otis, Boston; President, Dr. Frederick T. Lord, Boston; Honorary Vice-Presidents, Dr. George H. Bigelow, Milton; Rt. Rev. William Lawrence, D.D., Boston; Rabbi Harry Levi, Brookline; William Cardinal O'Connell, Brighton; Vice-President, Dr. Francis P. Denny, Brookline, Treasurer; Mr. Arthur Drinkwater, Cambridge; Assistant Treasurer, Mr. Romney Spring, Boston.

David Moxon, Health Officer of Framingham, was Chairman of the Nominating Committee. The Directors chosen at the meeting were as follows: Mr. Sydney W. Ashe, Pittsfield; Dr. George H. Bigelow, Milton; Mr. Frederic Bailey, North Scituate; Dr. Walter P. Bowers, Clinton; Dr. Robert P. Carpenter, North Adams; Dr. Francis G. Curtis, West Newton; Miss Josephine B. Colt, Boston; Mr. Arthur Drinkwater, Cambridge; Dr. C. Benjamin Fuller, Waltham; Mr. William B. Geoghegan, New Bedford; Mr. William N. Goodell, Lowell; Mrs. John D. Henry, Boston; Dr. William O. Hewitt, Attleboro; Professor Murray P. Horwood, Newton Centre; Dr. Roger I. Lee, Boston; Dr. Frederick T. Lord, Boston; Dr. Richard P. MacKnight, New Bedford; Mr. David Moxon, Framingham; Dr. Edward O. Otis, Boston; Dr. Alton S. Pope, Newtonville; Dr. Sumner H. Remick, Waltham; Mr. John Ritchie, Malden; Mr. Thornton K. Ware, Fitchburg; Miss Margaret Weir, Beverly; Rev. C. P. Wellman, Woburn; Dr. Harry S. Wagner, Pocasset; Dr. Andrew Peters, Pittsfield; Dr. John B. Hawes, 2nd, Boston; Dr. Cleaveland Floyd, Boston; Dr. Nathaniel K. Wood, Boston; Mr. Alexander Wheeler, Boston; Mrs. Reginald Heber White, Jamaica Plain; Mrs. Gardiner H. Fiske, Boston; Mr. George H. Gilbert, Segreganset; Dr. Felix McGirr, Cambridge; Mrs. Mabel Greeley Smith, Cambridge; Mrs. Anne E. Guild, Chelsea; Dr. Olin S. Pettingill, Middleton; Mrs. T. J. McAuliffe, Swampscott; Dr. John H. Lindsey, Fall River; Mrs. A. L. Johnson, Orange; Mr. Walter S. Barr, West Springfield; Mr. Clifton H. Hobson, Palmer; Mr. Clarence E. Hodgkins, Northampton; Dr. I. J. Clarke, Haverhill; Dr. S. L. Skvirsky, Holyoke; Mrs. Frances B. Mowry, Salem Centre, New Hampshire; Mr. Charles H. Hobson, Lowell; Mrs. Carolyn M. Engler, Lynn; Dr. Samuel Hoberman, Malden; Mrs. Marion Sevrens, Nantucket; Dr. John M. Wise, New Bedford; Mrs. Allan R. Shepard, Newburyport; Dr. Cecil Clark, Newtonville; Dr. Francis P. Denny, Brookline; Dr. Nahum R. Pillsbury, South Braintree; Mrs. William C. Rogers, Cohasset; Mr. Frank W. Lesure, Fitchburg; Mrs. B. Milo Burke, Brockton; Dr. J. Holbrook Shaw, Plymouth; Dr. J. Frank Donaldson, Salem; Mr. E. Earl Blakely, Medford; Mr. James J. Quinn, Winchester; Dr. Carl C. MacCorison, North Reading; Rev. J. F. McGillicuddy, North Brookfield; Mrs. Chandler Bullock, Worcester; Dr. Roy J. Ward, Worcester; Dr. Arthur K. Stone, Framingham Centre.

The following resolution touching on the death of Dr. George S. Hill was presented by Dr. William O. Hewitt, Health Officer of Attleboro:

> "*Resolved*, That in annual meeting assembled we record with deep sorrow the passing of Dr. George S. Hill, for many years a Director of the Massachusetts Tuberculosis League.
>
> As Chairman of the Preventorium Committee and as a member of the Executive Committee of the Boston Tuberculosis Association, as well as a Director of this League, Dr. Hill rendered invaluable service in the prevention of tuberculosis in this Commonwealth.
>
> *Therefore Be It Resolved*, That this ex-

pression of gratitude for his great contribution to our work and respect for the memory of Dr. Hill be spread upon the minutes of the League and a copy sent to his family.

Following the Corporation meeting a luncheon meeting of Board of Directors and guests was held at which Mr. J. Joseph MacCarthy, President of the Southern Worcester County Health Association, spoke on "The Place of the Citizen in Public Health Work" and Dr. Iago Galdston, Secretary of the Medical Information Bureau and Public Health Committee of the New York Academy of Medicine, spoke on "Educational Aspects of Tuberculosis Work." The addresses will be submitted for publication in the *Journal*.

PLYMOUTH DISTRICT MEDICAL SOCIETY

The April meeting of the Plymouth District Medical Society was held at the Lakeville Sanatorium on April 16, 1931. As the members reached the Sanatorium they were met by Dr. Alley and his associate physicians, who acted as a reception committee. The meeting was called to order by President Frederick W. Murdock at 11:15 A. M. Previous to the business meeting moving pictures were shown (by a representative of the Parke Davis Company) depicting the latest methods of preparing diphtheria anti-toxin, vaccine lymph and anti-typhoid serum. These pictures were very instructive and were enjoyed by the large number of physicians present from all over Plymouth and Bristol counties. Dr. George A. Moore read the records of the last regular meeting and they were declared approved. Dr. Frederick W. Murdock, president of the society, then announced that as this was the annual meeting, the election of officers would take place. He called upon the nominating committee, which consisted of Dr. John P. Shaw, chairman, Dr. E. Dwight Hill of Plymouth, and Dr. Richard B. Rand of North Abington, who presented the names of the officers for the ensuing year as follows:

President: Dr. John J. McNamara, Brockton.
Vice-President: Dr. Charles G. Miles, Brockton.
Secretary: Dr. George A. Moore, Brockton.
Treasurer: Dr. Alfred C. Smith, Brockton.
Orator for 1932: Dr. Leon A. Alley, Lakeville.
Librarian: Dr. John H. Weller, Bridgewater.
Commissioner of Trials: Dr. Ivus I. Richmond, East Bridgewater.

Councillors: Dr. E. Dwight Hill, Plymouth, Nominating Councillor; Dr. Wilfred G. Brown, Plymouth, Alternate; Dr. Thomas H. McCarthy, Brockton; Dr. John P. Shaw, Brockton; Dr. Alfred C. Smith, Brockton; Dr. Frederick W. Murdock, Brockton; Dr. David B. Tuholski, Brockton.

Censors: Dr. John P. Shaw, Brockton, Supervisor; Dr. Leonard A. Baker, Middleboro; Dr. Richard B. Rand, North Abington; Dr. Arthur W. Carr, Bridgewater; Dr. Charles Hammond, Hanover.

A motion was then made that the secretary cast one ballot for the list as submitted. They were elected in due form. Dr. John J. McNamara, the newly elected president, was then presented. He said that he would, to the best of his ability, uphold the splendid record and high standards that had been shown by preceding presidents and he hoped everyone would coöperate and help maintain the tradition of the society. The newly elected vice-president, Dr. Charles G. Miles of Brockton, was then presented.

Dr. Miles in responding said that the Plymouth District Society was known all over the state for its progressive work in advancing the high standards of the Massachusetts Medical Society. He said that he would, to the utmost of his ability, work for the society and keep up the high record that had been set, in the last few years. President Murdock then thanked all of the officers and members of the society who had coöperated with him in the past year and said he would do everything he could to endorse the new administration in advancing progressive work.

Dr. Murdock stated that the host, Superintendent Leon A. Alley of the Lakeville Sanatorium, had prepared an unusual program. His four physicians were ready to speak on the subjects that had been assigned to them, pertaining to the practical work that had been done by this splendid institution. Dr. Murdock said he felt that "people in Plymouth County, and in fact the whole state did not realize the wonderful work that the physicians of the Lakeville Sanatorium were doing in helping the poor unfortunate people of the state who had tuberculosis of the hip, spine, and joints". He said, "These men are here today to give our society a practical talk and demonstration, as to how they treat these stricken people."

As the first speaker of the morning, he introduced Dr. George L. Parker, assistant superintendent of the Lakeville Sanatorium, who gave a very instructive address with demonstrations of tuberculosis of hips, knees, and sacroiliac joints. Dr. Parker brought out the salient points in the diagnosis, prognosis, and treatment of these lesions as applied in this hospital. Numerous cases and roentgenograms were shown pointing out the results with and without surgery.

Dr. Murdock then called upon Dr. Peter Ferrini, who discussed the problem incident to tuberculosis of the spine with presentation of cases of tuberculous spinal disease demonstrating the following points of interest:

1. The degree of abscess formation and not the angular deformity of the spine causes the paralysis in the paraplegic cases.
2. The degree of calcification as evidenced by roentgenograms indicates the progress of recovery.
3. Operative treatment after a period of preparation shortens hospitalization of the patient by a six months' period.

President Murdock then called upon Dr. Louis Alpert, who gave a technical demonstration of tuberculosis of the skin and eyes. Dr. Alpert explained

the various modes of treatment for these lesions as applied in this hospital. Dr. Murdock then called upon Dr. Richard Cooke, who took for his subject, "A few erroneous diagnoses" based on two cases which had been admitted as tuberculous cervical adenitis but which after careful study proved not to be tuberculous lesions. One case was found to be Hodgkin's disease, as proved by autopsy, the other one of luetic origin, as shown by positive Wassermann, with improvement under intensive antiluetic therapy.

He further reported that general sanatorium treatment of some nine hundred extra-pulmonary tuberculous cases, over a period of five years with reference to heliotherapy natural or artificial, along with surgical intervention at the proper time showed striking results. Twenty-one hips, twenty spines and eleven knees had been successfully fused surgically. It was clearly shown that surgery in the various bone and joint cases of tuberculosis determined the length of residence in the hospital. Many histological, bacteriological, and pathological specimens from the hospital laboratory were exhibited.

After the speakers concluded their program, the president called for the question period. Many physicians asked questions in regard to the subjects presented to them. Altogether it was a very instructive and helpful meeting. A steak dinner was then served to the guests of Superintendent Leon A. Alley. Dr. Alley proved to be a most cordial host and everything was done to make the meeting instructive and helpful. He gave the society an invitation to hold a meeting at the institution next year, which was readily accepted.

The attendance at the Plymouth District Medical Society meetings has been a feature and physicians generally are taking a keen interest in the programs. Among the large number of physicians present was Dr. Wakefield, chief of the Chadwick Clinics, who spoke briefly during the luncheon.

MASSACHUSETTS SOUTHEASTERN ASSOCIATION OF BOARDS OF HEALTH

The spring meeting of the Massachusetts Southeastern Association of Boards of Health was held in Sandwich on April 22, with an interesting program largely of activities in coöperation with the Massachusetts Department of Public Health. Dr. A. P. Goff, County Health Officer for Barnstable, reported on the health of the district, noting increased use of toxin-antitoxin, and practically complete vaccination against smallpox. He stated that much emphasis had been placed on early diagnosis, with the twelve local women's clubs making studies of the health conditions of their own towns.

In response to a call from the floor with reference to the work in mosquito suppression, Mr. G. W. Hallett of Osterville, president of the association, noted that the work had been done by the communities in coöperation one with another, the State having thus far been called upon but little. Funds to the amount of about $200,000 were raised last year, and this money was used for the work, which included some 460 miles of drainage ditches. The major breeding places are now gone, and the problem at present is to find and care for the minor ones. The mosquito returns to its old breeding places, which are largely in salt stagnant water, ninety per cent. of the insects being the salt water varieties. This year there are sixty-five men in the work.

Dr. W. D. Knowlton, of the State Department of Health, spoke of progress in establishing health administration units, like that at Barnstable. Very recently a unit of fifteen towns in southwestern Berkshire County has been established, with another in prospect in the neighborhood of Ayer.

Dr. Paul Wakefield, Director of the Chadwick Clinics in the State Ten-year Program, was the principal speaker, who gave to the assembled health officers the details of the program which is now under way in Barnstable County. His address began with contrasts between health conditions in China, where he was stationed for a number of years, and those in this country, with the argument that it is our duty to improve even our conditions. Many x-ray films which were of great interest to the members of the boards, served to illustrate the care of the diagnosticians and the development in reading the films accomplished during the past few years. Dr. Wakefield answered many questions in the general discussion that followed. In the course of this discussion the speaker stated that the State takes nothing away from local physicians. It finds the cases, and then turns them over to the family doctors for care and treatment. At the conclusion of the paper, Dr. Wakefield gave practical illustrations of the technique of the tuberculin test.

Miss Flora E. Knight, who is the advance agent of the Chadwick Clinics, spoke briefly with reference to preliminary work in meetings of teachers and parents, and the distribution of the consent papers to the latter.

HARVARD MEDICAL SOCIETY

The Harvard Medical Society held its regular meeting Tuesday evening, April 14, at 8:15 P. M. in the amphitheatre of the Peter Bent Brigham Hospital, Dr. Harvey Cushing presiding.

The medical case was presented by Dr. Young. It is one of two cases of primary adenocarcinoma of the jejunum reported last year by Dr. Francis Newton: A 41-year-old housewife, who was well and active until April 1927, had a sudden severe epigastric pain, one-half hour after a meal, which radiated to both sides and to the right shoulder. This was accompanied by nausea and vomiting; she suffered a similar experience three or four times in the succeeding few months and occasionally noticed visible peristaltic waves in the upper abdomen.

On entry to the hospital the physical examination and routine laboratory work were essentially negative. X-ray study showed an obstruction in the upper part of the jejunum, with dilatation and retention

of barium above. Operation was performed and an annular constricting mass was found below the ligament of Treitz, the stomach and duodenum being distended and thickened. There was no evidence of metastases. The lesion was resected and an end to end anastomosis of intestine effected. Microscopic section showed invasion of the muscularis and part of the mesentery by the growth.

The patient was well until November 1927 when she began to have pain in the lower abdomen. Pelvic examination revealed a large mass, which at subsequent operation was found to be retroperitoneal. Only a part of it was removed because of shock. Microscopic sections showed a structure similar to the first growth.

She was again symptom-free until July 1928, when she entered the hospital because of severe right lower quadrant pain. The same mass was felt by pelvic examination, but found to be exquisitely tender. At operation an obstruction at the sigmoid region, a dilated colon, and an acutely inflamed appendix were found. The appendix was removed and a colostomy performed and the patient was symptom-free until one month ago. At that time she began to experience right frontal and temporal headaches associated with vomiting, unrelieved by ordinary drugs, and only partially relieved by morphia. The day before admission some shaking and rigidity of the right leg were noticed. On admission she was stuporous, and showed no changes at the physical examination except slight blurring of the optic discs, slight right facial weakness and occasional bilateral positive Babinski. Urinalysis showed that the specimen was loaded with red and white blood cells; lumbar puncture showed fluid under normal pressure and normal dynamics, with two plus globulin, and total protein of 120; skull plates showed indefinite mottling in the frontal region. It is the opinion of the service that the original carcinoma has metastasized to the brain.

The surgical case was presented by Dr. Grey. A 56-year-old man entered the Out Door Department two days ago because of severe pain in his left forearm. X-ray showed this to be the site of pathological fracture. For six months the patient had noticed slightly tender, non-painful lumps on the back of his right hand, right external malleolus, enlargement of the left knee and less marked enlargement of the right. Several days before entry, lifting a barrel, he had felt something snap in his left forearm, which immediately became the site of a lump and severe pain.

Examination was negative except for the deformities mentioned above. A biopsy was done on the ankle and the specimen was found to be composed of the typical plasma cells of myeloma. X-rays showed multiple areas of expansion and trabeculation in the bones, and several punched out areas in the skull. Dr. Merrill C. Sosman pointed out that the individual lesions would be indistinguishable from benign giant cell tumor of bone. A blood smear showed 13 per cent. monocytes. X-ray treatment was started. Dr. Sosman stated that the response to this treatment is slow but referred to a case which is alive and well 10 years after its employment.

The lecturer of the evening, Dr. Irving S. Cutler, Dean of Northwestern University Medical School, gave a very interesting biographical, historical talk, illustrated with lantern slides, on "Two Pioneer Army Surgeons—Edwin James and John Gale."

CARDIAC COURSE

New England Heart Association

The next (seventh) meeting of the Cardiac Course of the New England Heart Association for the season 1930-1931 will be held in the Boston Medical Library (John Ware Hall) on Wednesday afternoon, May 13 (not May 6) 1931, at four-thirty.

The Cardiac Nerves and Heart Pain

1. The Cardiac Nerves. Dr. James C. White, Massachusetts General Hospital.
2. Angina Pectoris and Its Treatment. Dr. Frank M. Howes, New Bedford.
3. Precordial Pain (other than Angina Pectoris) and Tenderness. Dr. Paul D. White, Massachusetts General Hospital.
4. Discussion to be opened by Dr. Granville E. Hoffses, Manchester, N. H.

All who are interested are invited to attend.

Paul D. White, M.D.

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

Renewed attention is called to the very interesting meeting of the Essex South District Medical Society to be held May 12. The notice appeared in our issue of March 26, page 690.

THE AMERICAN PROCTOLOGIC SOCIETY

Annual Meeting

The thirty-second annual meeting of the American Proctologic Society will convene in Philadelphia June 7, 8, and 9. Sunday, June 7, will be devoted to registration and social functions. The program for Monday and Tuesday will include scientific sessions, the annual executive session, and the annual dinner Tuesday evening. Ethical practitioners are invited to participate in the events of the second and third days of the meeting.

Full information will be furnished by Dr. Curtice Rosser, Secretary, 710 Medical Arts Building, Dallas, Texas.

THE POSTGRADUATE COURSE OF EAR, NOSE AND THROAT SURGERY AT THE UNIVERSITY OF BORDEAUX, FRANCE

The Postgraduate Course of Ear, Nose and Throat Surgery at the University of Bordeaux, France, will commence July 27, 1931.

The course is given in the English language. The class is limited to tweive physicians and is offered by Prof. George Portmann.

For information apply to Dr. Leon Felderman, 413 Mitten Building, Philadelphia, Penna.

MASSACHUSETTS SOCIETY OF EXAMINING PHYSICIANS

The annual meeting of the Massachusetts Society of Examining Physicians will be held at the Copley-Plaza, Boston, Wednesday, May 6, at 6:30 P. M. Dinner at 7:00 promptly. Election of officers.

PAPERS

1. Methanol Poisoning—Herman C. Lythgoe, State Health Department.

2. Gentian Violet Treatment of Burns—Dr. Robert H. Aldrich, Boston City Hospital.

3. The Maggot Treatment of Osteomyelitis—Dr. Stephen Maddock, Boston City Hospital.

Discussion opened by Dr. Otto Hermann.

JOSEPH H. SHORTELL, M.D., *President.*
WM. PEARCE COUES, M.D., *Secretary.*

SOCIETY MEETINGS

CONGRESSES AND CONFERENCES

May 1—The Massachusetts Psychiatric Society. See page 897, issue of April 23.

May 1-2—New England Conference on Mental Hygiene in Education. See page 897, issue of April 23.

May 6—Massachusetts Society of Examining Physicians. See notice above.

May 7—The next lecture of the William Harvey Society will be held on Thursday evening, May 7, 1931, at the Beth Israel Hospital Auditorium at eight o'clock. The speaker of the evening will be Rabbi Harry Levi, of the Temple Israel. The subject will be "Education and Life." Dr. David Berlin, of the Tufts College Medical School faculty, will be chairman.

May 11-14—Meeting of the National Tuberculosis Association at Syracuse. See page 1310, issue of December 25.

May 13—Cardiac Course. See page 951.

June 7, 8, and 9—The American Proctologic Society. See page 951.

June 8-12—Woman's Auxiliary to the American Medical Association. See page 743, issue of April 2.

June 8-14—International Hospital Congress. See page 521, issue of March 5.

June 9—Medical Veterans Meeting. See page 895, issue of April 23.

June 9—The Scientific Session of the American Heart Association. See page 742, issue of April 2.

June 16-19—Catholic Hospital Association. See page 690, issue of March 26.

July 6-11—Medical Clinic, Paris. See page 520, issue of March 5.

July 26-31—Third Congress of the Pan American Medical Association. See page 632, issue of March 19.

July 27—The Post Graduate Course of Ear, Nose and Throat Surgery at the University of Bordeaux, France. See page 951.

July 27-31—Third International Congress of Radiology, Paris. See page 789, issue of April 9.

Aug. 31 - Sept. 4—Neurologists will meet in Berne, Switzerland. See page 896, issue of April 23.

September 14-17—The American Public Health Association. See page 632, issue of March 19.

DISTRICT MEDICAL SOCIETIES

Bristol North District Medical Society

September 17—Details to be announced.

Essex North District Medical Society

Next meeting: Amesbury Country Club, Amesbury, May 13, 1931; dinner at 12.30. Speakers, Wm. H. Ross, President, New York State Medical Society, "A Medical Society's Public Relations Committee at Work."

Wm. J. French, Medical Director Commonwealth Fund, New York, "Fellowship Grants to Doctors in Rural Communities."

Essex South District Medical Society

Thursday, May 7—Censors meet at Salem Hospital at 3:30 P. M.

Tuesday, May 12—See page 690, issue of March 26.

Franklin District Medical Society

May—The meeting will be held on the second Tuesday of May at 11 A. M. at the Weldon Hotel, Greenfield.

Middlesex East District Medical Society

May 13—At Wakefield.

Middlesex South District Medical Society

May 7—At 2 P. M. the Censors' meeting for the examination of candidates will be held at the Boston Medical Library, 8 The Fenway, Boston.

Candidates from schools on accepted lists will forward application with certificate of graduation to the secretary at least one week prior to date of examination. Candidates from schools not on accepted list who have been in practice five years will forward applications together with five letters of recommendation from members in good standing in the Massachusetts Medical Society to Dr. P. P. Johnson, Cabot Street, Beverly, Mass. Fee for all candidates $10.00.

ALEXANDER A. LEVI, M.D., Secretary.

Norfolk District Medical Society

May 5—Annual Meeting. Details received too late for publication.

May 7—Censors' Meeting for examination of candidates at 171 Warren Street, Roxbury, 4 P. M. Candidates from schools on accepted list will forward application with certificate of graduation to the secretary at least one week prior to date of examination. Candidates from schools not on accepted list who have been in practice five years will forward applications together with five letters of recommendation from members in good standing in the Massachusetts Medical Society to Dr. P. P. Johnson, Cabot Street, Beverly, Mass. Fee for all candidates $10.00.

FRANK S. CRUICKSHANK, Secretary.

Norfolk South District Medical Society

May 7—The censors will meet at 11:30 A. M. at the Norfolk County Hospital, South Braintree. The Society meets at 12.

NATHAN R. PILLSBURY, Secretary.

Suffolk District Medical Society

May 7—The Censors of the Suffolk District Medical Society will meet for the examination of candidates at the Medical Library, No. 8 The Fenway, Thursday, May 7, 1931, at 4 o'clock.

Candidates should make personal application to the Secretary, and present their medical diplomas at least one week before the examination.

LELAND S. McKITTRICK, Secretary.
205 Beacon Street, Boston, Mass.

BOOK REVIEWS

Warren's Handbook of Anatomy. From original dissections by John Warren. Text by Robert M. Green. Drawings by H. F. Aitken. Published by Harvard University Press.

John Warren, the fifth of the name in direct succession in Boston, began to teach anatomy at the Harvard Medical School immediately after his graduation in 1900 and continued without interruption until his untimely death in July 1928, when he had finally succeeded his uncle, the late Thomas Dwight, in the conduct of the department. A natural aptitude and the experience of twenty-eight years made him a rarely successful teacher of gross anatomy, and we may assume that in planning a textbook he had the purpose of supplying something that seemed to him hitherto lacking. During the last eight years of his life he had made personally more than four hundred dissections, and commissioned Mr. H. F. Aitken to make drawings therefrom, and these with an almost negligible amount of text were bequeathed to the Anatomical Department of the Harvard Medical School. Various of his colleagues, especially Dr. Robert M. Green, constituted themselves his literary executors and, after supplying a few

omissions, have issued from the Harvard University Press a volume of 384 pages and 324 half-tone plates, entitled Warren's Handbook of Anatomy.

The book as it stands, therefore, cannot be regarded as representing in any respect the full execution of Dr. Warren's purpose, since this was not known, and excellent as is the result of this labor of love on the part of his colleagues the world will share with them and the reviewer the keenest regret that he was not spared to complete it. The preface describes it as "an atlas with a descriptive text designed to adapt it as a handbook for dissection and as a work of reference for the surgeon and general practitioner rather than as a complete textbook of anatomy". The belief is expressed that it is adequate to meet the needs of a first-year course in human anatomy. It is reasonable, then, to examine the book to see how it attains these objects.

The dissections by Dr. Warren, many of the originals of which are preserved for student use in the Dwight Room of the Harvard Medical School are remarkable examples of the dissector's skill and the wash drawings by Mr. Aitken are beautifully executed and faithfully reproduced in half-tone. Some are quite exceptional in their beauty and veracity, and others in their originality, as for instance plates 53, 54, 58 of the orbit and globe of the eye; plate 76 showing the jugular bulb; and plates 117, 118, 199 of the muscles and nerves of the back. The joints in general are splendidly illustrated and plates 225 and 226 are possibly unique. In some instances, as for instance, where the joints of the carpus and tarsus have been laid open and the bones turned back on a hinge of ligament, the resulting view is so distorted that it might well fail of comprehension by the student. The difficult region of the perineum is well shown, in spite of an unwise and confusing order of insertion,—a criticism which may also be made of the illustrations of the inguinal canal. In figure 128 the transversus abdominis muscle appears to have been omitted entirely. Another hard subject to illustrate,—the valves of the heart—is well covered in plates 262, 263, 265. All the figures are without color, so that it will be understood why some of the more elaborate ones, in which an effort is made to show all the structures in detailed dissections of large areas, are almost too complicated for practical use. In this connection, too, the knotty problem of labeling structures has not been solved with complete success. In a commendable effort to avoid harming the artistic effect and beauty of the drawings by the many guide lines necessary in a complicated dissection they have been made so nearly invisible that they are quite difficult to identify and follow, and some of the labels themselves—owing doubtless to a difficulty of reproduction not known to a reviewer—are out of alignment, which impairs the perfection of the plate as a whole. The legends beneath the plates are faulty at times in not indicating exactly what is intended to be shown, and in some illustrations of small bones, as for instance of the carpus, tarsus, cranium and face where identification of surfaces is difficult, it is unfortunate that it is not stated whether they are right or left. As a matter of fact, all are from the right side, but no notation of this fact is given.

An inexplicable fault is the omission of blood vessels and nerves from the drawings of both extremities, whereas these structures are carefully shown in the plates of the face, neck, trunk and viscera, indeed sometimes with quite unnecessary elaboration and without due sense of relative values, as for instance in plate 210 of the arterial circulation through and about the obturator membrane, and plate 180 showing vascular anastomoses about the dorsal aspect of the scapula. Figure 239, occupying nearly a full page, is a handsome and painstaking representation of the myriad venules of the subcutaneous tissue of the sole of the foot, almost devoid of special anatomical or practical interest, so far as the reviewer knows, and certainly not worthy of such elaborate treatment. Since the plates represent only actual dissections, there is entire absence of diagrammatic or schematic figures of complicated groups of structures, such as the formation of the brachial plexus, the sacral plexus, or the relation of the structure, passing through the jugular foramen. It is a pity, too, that plane sections are omitted where they are essential for comprehension of a region, such as the accessory nasal sinuses.

The text is notable for clearness and literary style. The Basle anatomical nomenclature is used throughout with the English equivalent. A most praiseworthy feature is the inclusion throughout the text of remarks pointing out the practical clinical importance of anatomical facts and relationships as they are described, and giving briefly the physiology of the organs, especially where there is a striking correlation with structure:—here is manifest the wide experience of the editor as a clinician and as a teacher of applied anatomy. At times the same questionable sense of proportion is evident in the text as was noted in the illustrations, for instance,—the gall bladder is dismissed in three lines with no description of its all-important relationships or those of the cystic artery, while half a page is devoted to the physiology of biliary secretion, the mechanism and symptoms of obstructive jaundice, and the attribution of the story of Prometheus and the vulture gnawing at his liver to the experience of the ancients with biliary colic! Again in the description of the prostate, the account of prostatectomy and the discussion of the two-stage suprapubic operation in cases of infection seem out of place in this atlas for first-year students. Inevitably some of these clinical comments provoke disagreement,—few surgeons would approve of the statement that in removing the spleen it is necessary to enter the omental bursa through the omentum or transverse mesocolon to secure the splenic vessels.

First-year students who use this book as a dissecting manual will find scarcely any directions as to how to proceed with the dissection; they will miss schematic figures of difficult relationships;

they will miss the visual distinctness given to complicated drawings by the use of color; they will be conscious of important omissions. It is hard to see how it can take the place of such a work as Cunningham's Manual of Practical Anatomy or similar books, and of course it makes no claim to play the rôle of the larger standard textbooks of descriptive anatomy. It is good that John Warren's remarkable and sometimes unique dissections should be recorded and perpetuated by Mr. Aitken's handsome drawings, and interpreted to students by the careful, graceful and readable text of Dr. Green and his coadjutors. It will be fortunate for student and practitioner alike if he can afford to add this handsomely appointed volume to other necessary anatomical texts. All who know of Warren's teaching, by experience or hearsay, will share the reviewer's sorrow that he was not granted the score or more of years, at whose threshold he seemed to stand, to permit the completion of this and other projects.

Textbook of Human Embryology. By CLEVELAND SYLVESTER SIMKINS. Published by F. A. Davis Company. Price $4.50.

In the statement in the author's preface that "the book has been prepared for the use of students interested primarily in the development of the human body," the accent should be laid heavily on the word "human". The book is not, and does not pretend to be, a textbook of general or comparative embryology, but is written for more advanced students in the subject, to whom the ordinary diagrams of development and the usual sections of chick and pig embryos are already familiar. In this respect it resembles somewhat the Human Embryology and Morphology by Sir Arthur Keith, and like the latter book should have a special appeal to advanced students and practitioners who wish to refresh their knowledge on certain points in human development.

The arrangement of the material is a little bewildering. After a short introductory chapter on the reproductive organs (which seems to the reviewer unnecessary from the point of view of the probable readers of the book), the cyclical phenomena in the female, the germ cells and their maturation, cleavage and implantation, and the development of the external form of the embryo are treated in turn. Then a chapter on the development of the face and jaws and the branchial arteries is interpolated before that on the fetal membranes and placenta. The special sense organs are dealt with before the more general subjects of the development of the muscular and skeletal systems and of the blood and vascular system. The descriptions of embryological development are not always clear and occasionally seem to differ slightly from the generally accepted ideas. A few mistakes, readily recognized as such, were noticed, as when it is stated that in a birth with unruptured membranes "such an offspring is termed a caul," instead of "born with a caul"; and the remarkable statement that decidual cells might be "as much as 50 mm. in diameter".

The borrowed illustrations, of which there are many, are well selected, mostly from American authors, many from the publications of the Carnegie Institute of Embryology. The new illustrations are adequate. The well-chosen bibliography will be found distinctly valuable.

BOOKS RECEIVED FOR REVIEW

William Henry Welch at Eighty. Edited by Victor O. Freeburg. Published for the Committee on the Celebration of the Eightieth Birthday of Doctor William Henry Welch by the Milbank Memorial Fund, New York. 230 Pages.

The Pathology of Generalized Vaccinia in Rabbits, by Ralph D. Lillie and Charles Armstrong. Published by the U. S. Government Printing Office, Washington. 95 Pages.

Les Diagnostics Anatomo-Cliniques de P. Lecène. 11. Appareil Génital de la Femme (First Part) by P. Moulonguet and S. Dobkevitch. Published by Masson et Cie. 286 Pages. Price 75 fr.

Primary Syphilis in the Female by Thomas Anwyl Davies. Published by Humphrey Milford, Oxford University Press. 111 Pages. Price $4.00.

The Diet Book for Doctor, Patient and Housewife with Specimen Menus for One Week and Recipes by Marguerite Requa Rea. With a foreword by Sir James Purves-Stewart. Published by Humphrey Milford, Oxford University Press. 197 Pages. Price $2.75.

The Meaning of Psychoanalysis by Martin W. Peck. With an introduction by Bernard Glueck. Published by Alfred A. Knopf. 273 Pages.

Deep X-Ray Therapy in Malignant Disease by Walter M. Levitt. With an introduction by Sir Thomas Horder. Published by John Murray. 128 Pages.

A Handbook for Senior Nurses and Midwives by J. K. Watson. Second Edition. Published by Humphrey Milford, Oxford University Press. 676 Pages. Price $4.00.

Transactions of the American Gynecological Society. Volume 55 for the year 1930. Edited by Floyd E. Keene. Published by The C. V. Mosby Company. 302 Pages.

The Practical Medicine Series. General Surgery. Edited by Evarts A. Graham. Series 1930. Published by The Year Book Publishers. 848 Pages. Price $3.00.

The Diagnosis and Treatment of Pneumonia by Campbell P. Howard. Volume X of Oxford Monographs on Diagnosis and Treatment edited by Henry A. Christian. 263 Pages.

Lehrbuch der Allgemeinen Physiologie. Under assistance of Prof. Dr. L. Asher and others. Edited by Dr. Phil. et Med. Ernst Gellhorn. Published by Georg Thieme. 741 Pages.